TEST REPORT

Report Number: R14176139-E3V4

Applicant	:	Sony Corporation 1-7-1 Konan Minato-ku Tokyo, 108-0076, Japan
FCC ID	:	PY7-83262V
EUT Description	:	GSM/WCDMA/LTE Phone with BT, DTS/UNII a/b/g/n/ac/ax, GPS, WPT & NFC
Test Standard(s)	:	FCC 47 CFR PART 15 SUBPART C

Date Of Issue:
2022-03-31

Prepared by:
UL LLC
12 Laboratory Dr.
Research Triangle Park, NC 27709 U.S.A.
TEL: (919)549-1400

ACCREDITED
CERT #0751.06

REPORT REVISION HISTORY

Rev.	Issue Date	Revisions	Revised By
V1	2022-03-16	Initial Issue	Brian Kiewra
V2	2022-03-25	Harmonized all antenna descriptors to read as chain 0 and chain 1.	Brian Kiewra
V3	2022-03-30	Added updated antenna port conducted test results due to power increase.	Brian Kiewra
V4	2022-03-31	Updated Section 6.2	Brian Kiewra

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1. ATTESTATION OF TEST RESULTS

COMPANY NAME: Sony Corporation
1-7-1 Konan Minato-ku
Tokyo, 108-0076, Japan

EUT DESCRIPTION: GSM/WCDMA/LTE Phone with BT, DTS/UNII a/b/g/n/ac/ax, GPS, WPT & NFC

SERIAL NUMBER: QV77002ZAQ, QV770028AQ, QV770019B8, QV77007QB8, QV77003RB8, QV770058B8, QV7700G8BB

SAMPLE RECEIPT DATE: 2022-01-13

DATE TESTED: 2022-01-28 to 2022-03-30

APPLICABLE STANDARDS	
STANDARD	**TEST RESULTS**
CFR 47 Part 15 Subpart C	Refer to Section 2

UL LLC tested the above equipment in accordance with the requirements set forth in the above standards. The test results show that the equipment tested is capable of demonstrating compliance with the requirements as documented in this report.

The results documented in this report apply only to the tested sample, under the conditions and modes of operation as described herein. It is the manufacturer's responsibility to assure that additional production units of this model are manufactured with identical electrical and mechanical components. All samples tested were in good operating condition throughout the entire test program. Measurement Uncertainties are published for informational purposes only and were not taken into account unless noted otherwise.

This document may not be altered or revised in any way unless done so by UL LLC and all revisions are duly noted in the revisions section. Any alteration of this document not carried out by UL LLC will constitute fraud and shall nullify the document. This report must not be used by the client to claim product certification, approval, or endorsement by a2La, NIST, or any agency of the U.S. government.

Approved & Released
For UL LLC By:

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Staff Engineer
Consumer Technology Division
UL LLC

Prepared By:

Brian Kiewra
Project Engineer
Consumer Technology Division
UL LLC

2. TEST RESULTS SUMMARY

This report contains data provided by the applicant which can impact the validity of results. UL LLC is only responsible for the validity of results after the integration of the data provided by the customer.

FCC Clause	Requirement	Result	Comment
See Comment	Duty Cycle	Reporting purposes only	ANSI C63.10 Section 11.6.
15.247 (a) (2)	6dB BW	Compliant	None
15.247 (b) (3)	Output Power		
See Comment	Average power	Reporting purposes only	Per ANSI C63.10, Section 11.9.2.3.2.
15.247 (e)	PSD	Compliant	None
15.247 (d)	Conducted Spurious Emissions		
15.209, 15.205	Radiated Emissions		
15.207	AC Mains Conducted Emissions		

3. TEST METHODOLOGY

The tests documented in this report were performed in accordance with FCC CFR 47 Part 2, FCC CFR 47 Part 15, ANSI C63.10-2013, KDB 558074 D01 15.247 Meas Guidance v05r02, KDB 414788 D01 Radiated Test Site v01r01.

4. FACILITIES AND ACCREDITATION

UL LLC is accredited by A2LA, certification # 0751.06, for all testing performed within the scope of this report. Testing was performed at the locations noted below.

	Address	ISED CABID	ISED Company Number	FCC Registration
☐	Building: 12 Laboratory Dr RTP, NC 27709, U.S.A	US0067	2180C	825374
☒	Building: 2800 Perimeter Park Dr. Suite B Morrisville, NC 27560, U.S.A		27265	

5. DECISION RULES AND MEASUREMENT UNCERTAINTY

5.1. METROLOGICAL TRACEABILITY

All test and measuring equipment utilized to perform the tests documented in this report are calibrated on a regular basis, with a maximum time between calibrations of one year or the manufacturers' recommendation, whichever is less, and where applicable is traceable to recognized national standards.

5.2. DECISION RULES

The Decision Rule is based on Simple Acceptance in accordance with ISO Guide 98-4:2012 Clause 8.2. (Measurement uncertainty is not taken into account when stating conformity with a specified requirement.)

5.3. MEASUREMENT UNCERTAINTY

Where relevant, the following measurement uncertainty levels have been estimated for tests performed on the apparatus:

PARAMETER	U_{Lab}
Radio Frequency (Spectrum Analyzer)	141.2 Hz
Occupied Channel Bandwidth	1.22%
RF output power, conducted	1.3 dB (PK) 0.45 dB (AV)
Power Spectral Density, conducted	2.47 dB
Unwanted Emissions, conducted	1.94 dB
All emissions, radiated	6.01 dB
Conducted Emissions (0.150-30MHz) - LISN	3.40 dB
Temperature	0.57°C
Humidity	3.39%
DC Supply voltages	1.70%

Uncertainty figures are valid to a confidence level of 95%.

5.4. SAMPLE CALCULATION

RADIATED EMISSIONS

Where relevant, the following sample calculation is provided:
Field Strength (dBuV/m) = Measured Voltage (dBuV) + Antenna Factor (dB/m) + Cable Loss (dB) – Preamp Gain (dB)
36.5 dBuV + 18.7 dB/m + 0.6 dB – 26.9 dB = 28.9 dBuV/m

MAINS CONDUCTED EMISSIONS

Where relevant, the following sample calculation is provided:
Final Voltage (dBuV) = Measured Voltage (dBuV) + Cable Loss (dB) + Limiter Factor (dB) + LISN Insertion Loss.
36.5 dBuV + 0 dB +10.1 dB+ 0 dB = 46.6 dBuV

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6. EQUIPMENT UNDER TEST

6.1. EUT DESCRIPTION

The EUT is a GSM/WCDMA/LTE Phone with BT, DTS/UNII a/b/g/n/ac/ax, GPS, WPT & NFC. This test report covers BLE testing

6.2. MAXIMUM OUTPUT POWER

The transmitter has a maximum peak conducted output power as follows:

Frequency Range (MHz)	Mode	Output Power (dBm)	Output Power (mW)
Chain 0			
2402 - 2480	BLE - 1Mbps	10.77	11.94
2402 - 2480	BLE - 2Mbps	11.16	13.06
2402 - 2480	BLE - 125kbps	10.66	11.64
2402 - 2480	BLE - 500kbps	10.66	11.64
Chain 1			
2402 - 2480	BLE - 1Mbps	11.07	12.79
2402 - 2480	BLE - 2Mbps	11.36	13.68
2402 - 2480	BLE - 125kbps	10.92	12.36
2402 - 2480	BLE - 500kbps	10.94	12.42

6.3. DESCRIPTION OF AVAILABLE ANTENNAS

The antenna(s) gain and type, as provided by the manufacturer' are as follows:
The radio utilizes two loop antennas for diversity, with the following maximum gains:

Chain	Frequency Range (MHz)	Maximum Gain (dBi)
0	2402-2480	-2.3
1	2402-2480	-8.6

	Theory of Operation	Antenna	Manufacturer Tolerance	Block Diagram
Chain 0	WLAN Main/Bluetooth #1	WLAN Main/Bluetooth #1	Chain 0	WLAN Main/Bluetooth #1
Chain 1	WLAN Sub/Bluetooth #2	WLAN Sub/Bluetooth #2	Chain 1	WLAN Sub/Bluetooth #2

6.4. SOFTWARE AND FIRMWARE

The EUT software installed during testing was conducted: 0.364 and radiated: 0.428.

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6.5. WORST-CASE CONFIGURATION AND MODE

Radiated emissions below 1GHz, above 18GHz, and power line conducted emissions were performed with the EUT set to transmit on both antennas at the channel with highest output power as worst-case scenario.

Band edge and radiated emissions between 1GHz and 18GHz were performed with the EUT set to transmit at the highest power on low, middle and high channels on both antennas. Bandedge run at both 2Mbps and 125Kbps as worst-case. Harmonics run on only 125Kbps as worst-case based on PSD.

The fundamental of the EUT was investigated in three orthogonal orientations X, Y, Z on each antenna. It was determined that X orientation was worst-case orientation for Chain 0 and Y orientation was worst-case for Chain 1. Therefore, all final radiated testing was performed with the EUT in X orientation for Chain 0 testing and Y orientation for Chain 1 testing.

Data rates as provided by the client were 125Kbps, 500Kbps, 1Mbps, and 2Mbps.

6.6. DESCRIPTION OF TEST SETUP

SUPPORT EQUIPMENT

Support Equipment List				
Description	**Manufacturer**	**Model**	**Serial Number**	**FCC ID**
Laptop	HP	14-dk1003dx	5CG016B4XM	TX2-RTL8821CE
Headphones	Sony	MDR-EX15AP	NA	NA
Adapter	Sony	XQZ-UC11-010-236-21	1821W34209742	NA
Adapter	Sony	XQZ-UC11-010-236-21	1821W34209856	NA
USB Cable	Sony	XQZ-UC1	NA	NA

I/O CABLES

I/O Cable List						
Cable No.	**Port**	**# of Identical Ports**	**Connector Type**	**Cable Type**	**Cable Length (m)**	**Remarks**
1	USB	1	USB-C	Non-Shielded	<3m	Connected to power supply
2	3.5mm	1	3.5mm Audio	Non-shielded	<1m	Connected to headphones

TEST SETUP

The EUT is setup as a standalone device. Test software exercised the radio card.

SETUP DIAGRAMS

Please refer to R14176139-EP2 for setup diagrams

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7. MEASUREMENT METHOD

On Time and Duty Cycle: ANSI C63.10, Section 11.6 : Zero-Span Spectrum Analyzer Method.

6 dB BW: ANSI C63.10 Subclause -11.8.1

Output Power: ANSI C63.10 Subclause -11.9.2.3.1 Method AVGPM (Measurement using an RF average-reading power meter)
ANSI C63.10 Subclause -11.9.2.3.2 Method AVGPM-G (Measurement using a gated RF average-reading power meter)

PSD: ANSI C63.10 Subclause -11.10.2 Method PKPSD (peak PSD)

Radiated emissions non-restricted frequency bands: ANSI C63.10 Subclause -11.11 and 6.10.4

Radiated emissions restricted frequency bands: ANSI C63.10 Subclause -11.12.1 and 6.10.5

General Radiated Spurious Emissions: ANSI C63.10-2013 Section 6.3 to 6.6

AC Power-line conducted emissions: ANSI C63.10-2013, Section 6.2.

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8. TEST AND MEASUREMENT EQUIPMENT

The following test and measurement equipment was utilized for the tests documented in this report:

Test Equipment Used - Wireless Antenna Port Conducted Measurement Equipment

Equipment ID	Description	Manufacturer/Brand	Model Number	Last Cal.	Next Cal.
HI0090	Environmental Meter	Fisher Scientific	15-077-963	2021-07-12	2022-07-12
PWM003	RF Power Meter	Keysight Technologies	N1911A	2021-08-30	2022-08-30
PWS001	Peak and Avg Power Sensor, 50MHz to 6GHz	Keysight Technologies	E9323A	2021-06-25	2022-06-25
SA0025	Spectrum Analyzer	Keysight Technologies	N9030A	2021-04-01	2022-04-01
SOFTEMI	Antenna Port Software	UL	Version 2021.11.03	NA	NA
-	DC Power Supply	Keysight Technologies	E3633A	NA	NA
MM0167 (PRE0126458)	True RMS Multimeter	Agilent	U1232A	2021-08-17	2022-08-17

Test Equipment Used - Radiated Disturbance Emissions Test Equipment (Morrisville – Chamber 2)

Equipment ID	Description	Manufacturer/Brand	Model Number	Last Cal.	Next Cal.
18-40 GHz					
AT0063	Horn Antenna, 18-26.5GHz	ARA	MWH-1826/B	2021-11-04	2022-11-04
Gain-Loss Chains					
C2-SAC04	Gain-loss string: 18-40GHz	Various	Various	2021-07-09	2022-07-09
Receiver & Software					
SA0020	Spectrum Analyzer	Agilent	E4446A	2021-05-25	2022-05-25
SOFTEMI	EMI Software	UL	Version 9.5 (18 Oct 2021)		
Additional Equipment used					
210642	Environmental Meter	Fisher Scientific	210701942	2021-8-16	2023-08-16

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Test Equipment Used - Radiated Disturbance Emissions Test Equipment (Morrisville – Chamber 4)

Equipment ID	Description	Manufacturer/Brand	Model Number	Last Cal.	Next Cal.
0.009-30MHz					
AT0079	Active Loop Antenna	ETS-Lindgren	6502	2021-08-19	2022-08-19
30-1000 MHz					
206210	Hybrid Broadband Antenna	Sunol Sciences Corp.	JB3	2021-03-11	2022-03-11
1-18 GHz					
206211	Double-Ridged Waveguide Horn Antenna, 1 to 18 GHz	ETS Lindgren	3117	2021-03-11	2022-03-11
AT0069	Double-Ridged Waveguide Horn Antenna, 1 to 18 GHz	ETS Lindgren	3117	2021-06-29	2022-06-29
Gain-Loss Chains					
C4-SAC01	Gain-loss string: 0.009-30MHz	Various	Various	2021-05-07	2022-05-07
C4-SAC02	Gain-loss string: 25-1000MHz	Various	Various	2021-05-07	2022-05-07
C4-SAC03	Gain-loss string: 1-18GHz	Various	Various	2021-05-07	2022-05-07
Receiver & Software					
SA0026	Spectrum Analyzer	Agilent	N9030A	2021-07-16	2022-07-16
206496	Spectrum Analyzer	Rohde & Schwarz	ESW44	2022-02-15	2023-02-15
SOFTEMI	EMI Software	UL	Version 9.5 (18 Oct 2021)		
Additional Equipment used					
210642	Environmental Meter	Fisher Scientific	210701942	2021-8-16	2023-08-16

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Test Equipment Used - Line-Conducted Emissions – Voltage (Morrisville – Conducted 1)

Equipment ID	Description	Manufacturer	Model Number	Last Cal.	Next Cal.
CBL087	Coax cable, RG223, N-male to BNC-male, 20-ft.	Pasternack	PE3W06143-240	2021-04-05	2022-04-05
s/n 210701941	Environmental Meter	Fisher Scientific	15-077-963	2021-08-16	2023-08-16
LISN003	LISN, 50-ohm/50-uH, 250uH 2-conductor, 25A	Fischer Custom Com.	FCC-LISN-50/250-25-2-01	2021-08-16	2022-08-16
75141	EMI Test Receiver 9kHz-7GHz	Rohde & Schwarz	ESCI 7	2021-08-17	2022-08-17
ATA222	Transient Limiter, 0.009-100MHz	Electro-Metrics	EM-7600	2021-04-05	2022-04-05
PS214	AC Power Source	Elgar	CW2501M (s/n 1523A02396)	NA	NA
SOFTEMI	EMI Software	UL	Version 9.5 (18 Oct 2021)		

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9. ANTENNA PORT TEST RESULTS

9.1. ON TIME AND DUTY CYCLE

LIMITS

None; for reporting purposes only.

PROCEDURE

ANSI C63.10, Section 11.6 : Zero-Span Spectrum Analyzer Method.

ON TIME AND DUTY CYCLE RESULTS

Mode	ON Time B (msec)	Period (msec)	Duty Cycle x (linear)	Duty Cycle (%)	Duty Cycle Correction Factor (dB)	1/B Minimum VBW (kHz)
Chain 0						
BLE - 1Mpbs	2.130	2.500	0.852	85.20	0.70	0.469
BLE - 2Mpbs	1.075	1.875	0.573	57.33	2.42	0.930
BLE - 125Kpbs	17.050	17.500	0.974	97.43	0.11	0.059
BLE - 500Kpbs	4.560	5.000	0.912	91.20	0.40	0.219
Chain 1						
BLE - 1Mpbs	2.130	2.500	0.852	85.20	0.70	0.469
BLE - 2Mpbs	1.075	1.875	0.573	57.33	2.42	0.930
BLE - 125Kpbs	17.050	17.500	0.974	97.43	0.11	0.059
BLE - 500Kpbs	4.560	5.000	0.912	91.20	0.40	0.219

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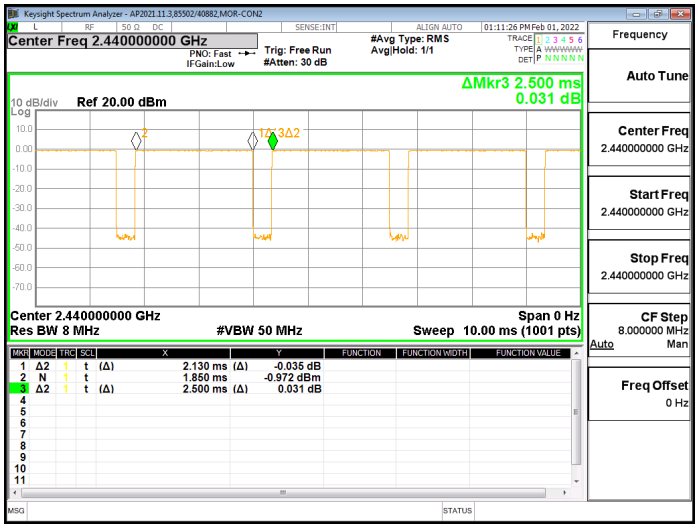
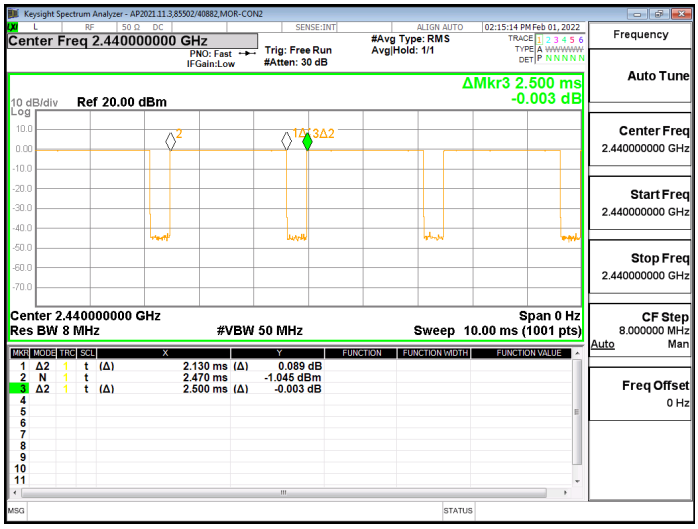


DUTY CYCLE BLE – 1Mbps CHAIN 0



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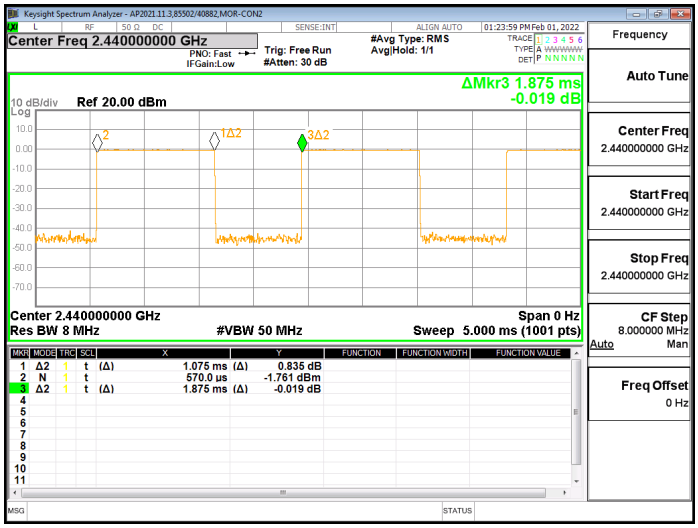

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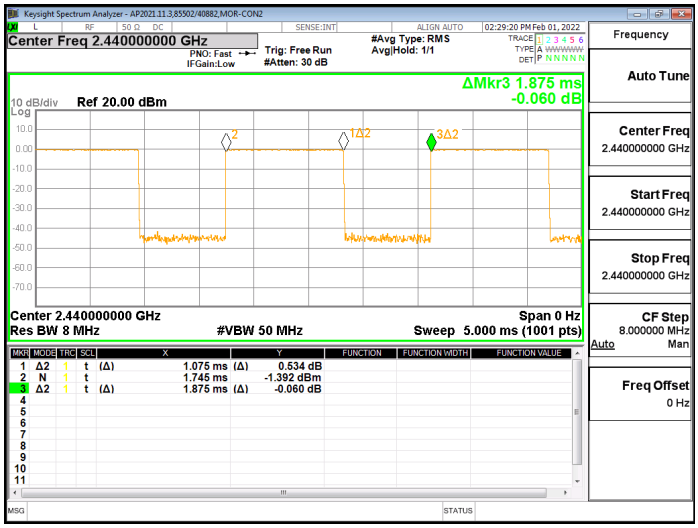

DUTY CYCLE BLE – 2Mbps CHAIN 1

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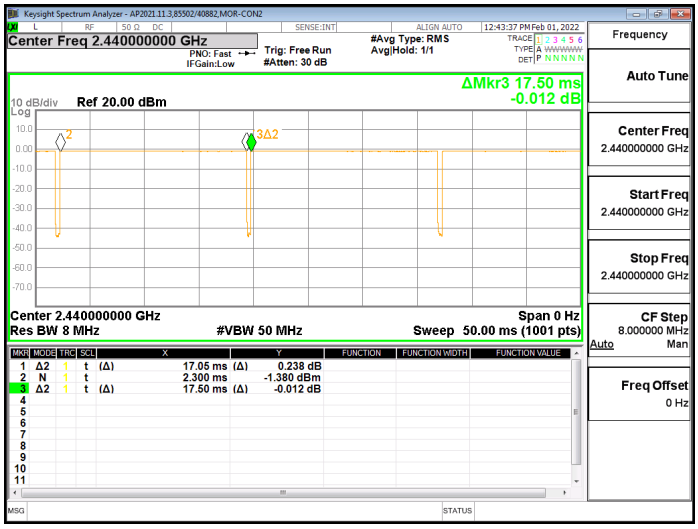
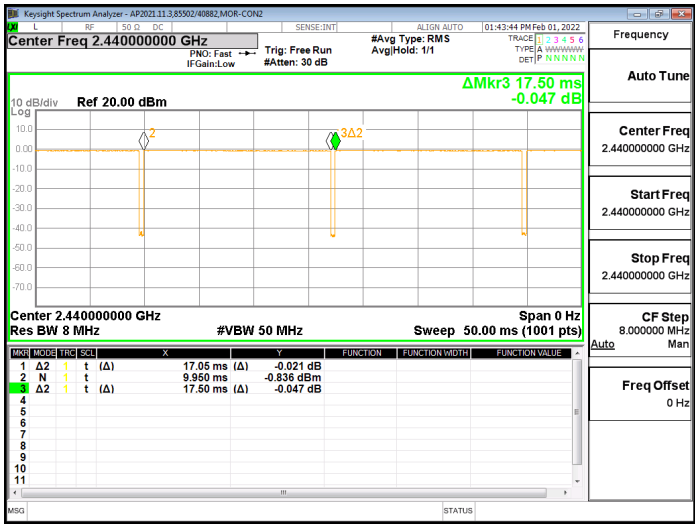


DUTY CYCLE BLE – 125Kbps CHAIN 0



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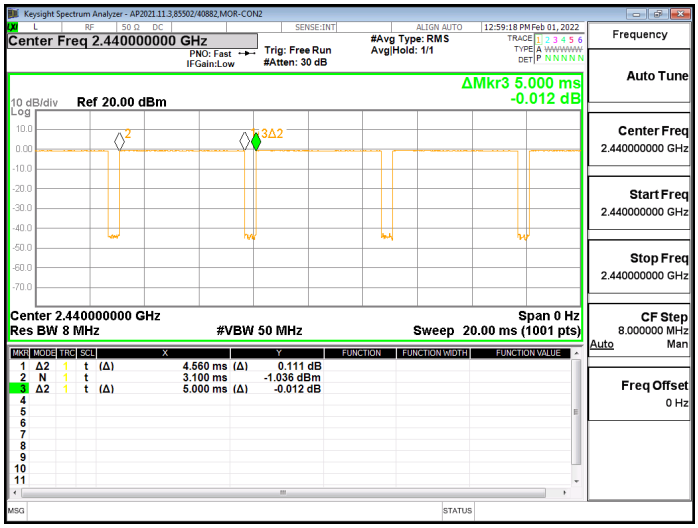

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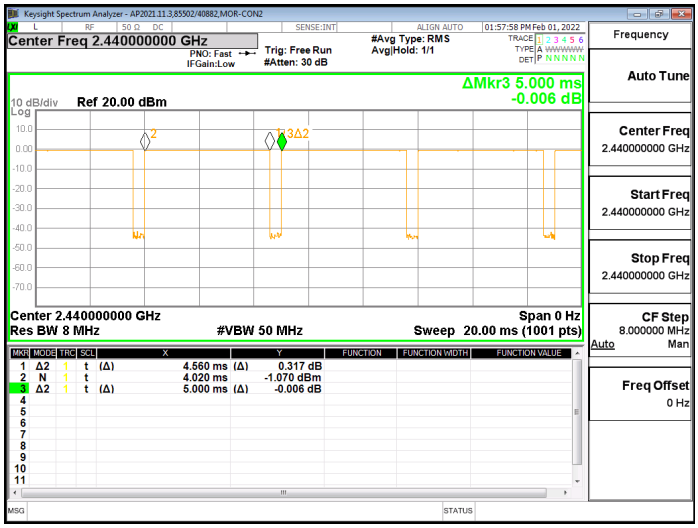


DUTY CYCLE BLE – 500Kbps CHAIN 1

9.2. 6 dB BANDWIDTH

LIMITS

FCC §15.247 (a) (2)

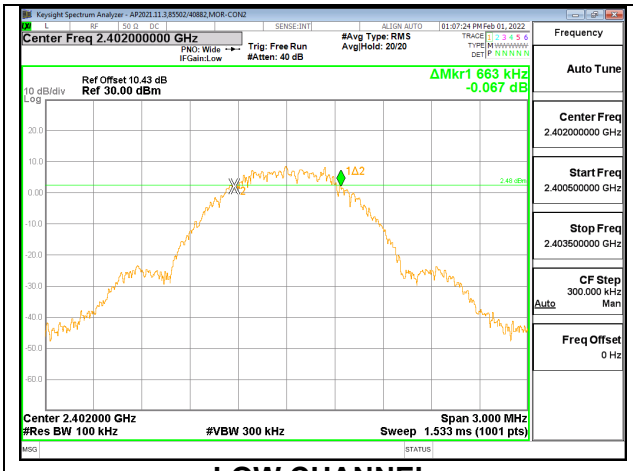
The minimum 6 dB bandwidth shall be at least 500 kHz.

RESULTS

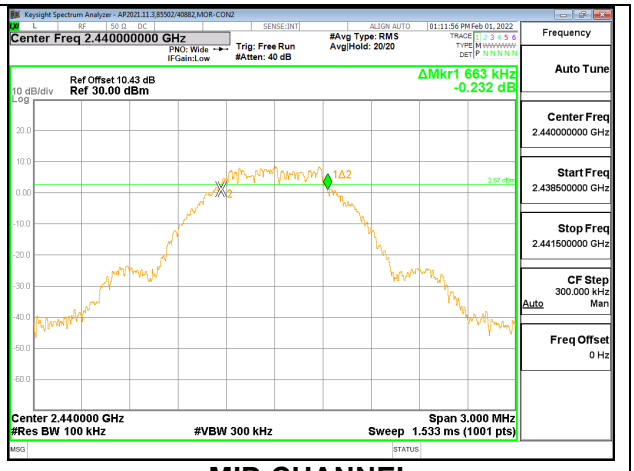
9.2.1. BLE (1Mbps)

Chain 0

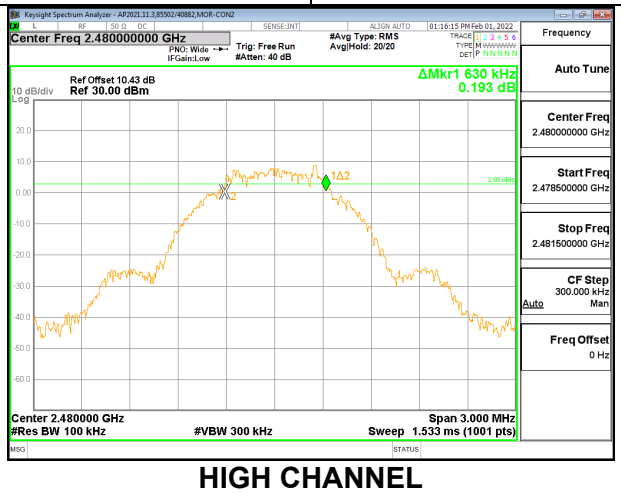
Channel	Frequency (MHz)	6 dB Bandwidth (MHz)	Minimum Limit (MHz)
Low	2402	0.6630	0.5
Middle	2440	0.6630	0.5
High	2480	0.6300	0.5



LOW CHANNEL



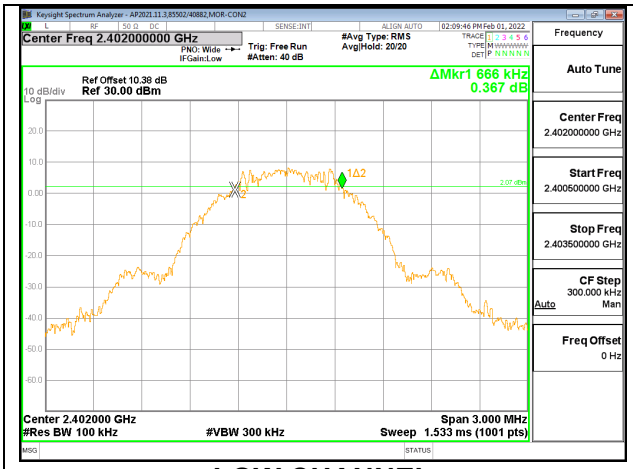
MID CHANNEL



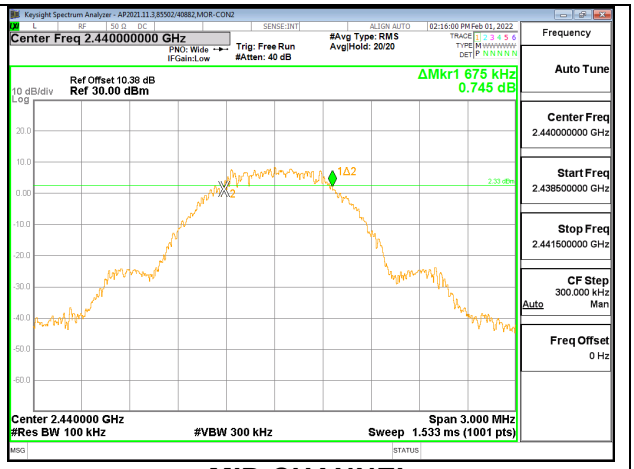
HIGH CHANNEL

Chain 1

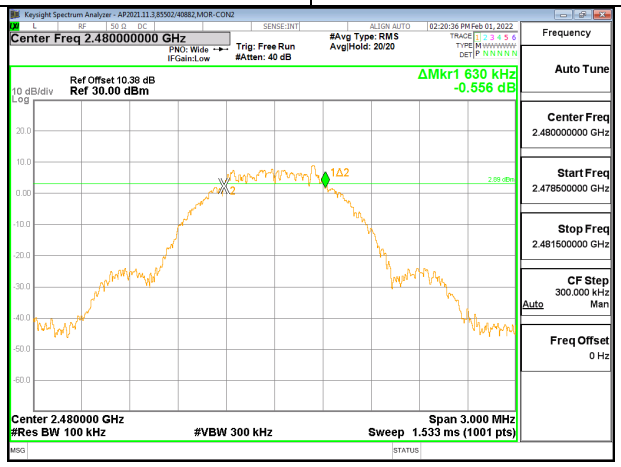
Channel	Frequency (MHz)	6 dB Bandwidth (MHz)	Minimum Limit (MHz)
Low	2402	0.6660	0.5
Middle	2440	0.6750	0.5
High	2480	0.6300	0.5



LOW CHANNEL



MID CHANNEL

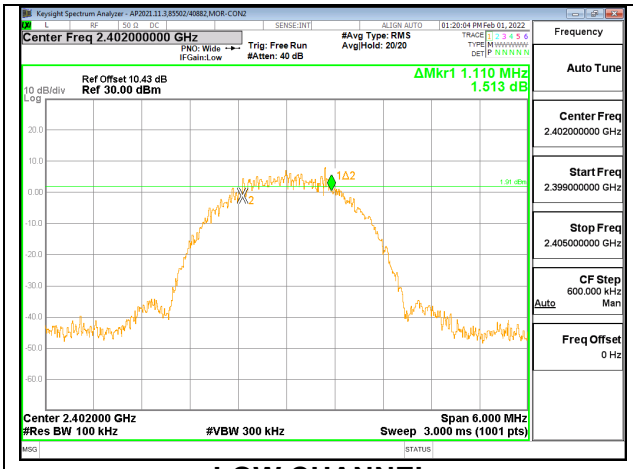


HIGH CHANNEL

9.2.2. BLE (2Mbps)

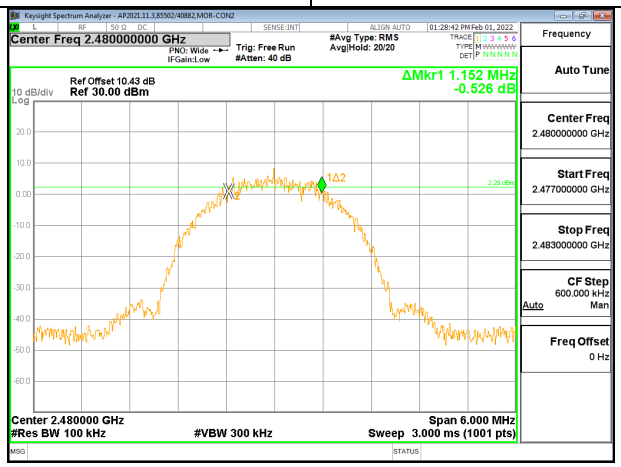
Chain 0

Channel	Frequency (MHz)	6 dB Bandwidth (MHz)	Minimum Limit (MHz)
Low	2402	1.1100	0.5
Middle	2440	1.1340	0.5
High	2480	1.1520	0.5



LOW CHANNEL

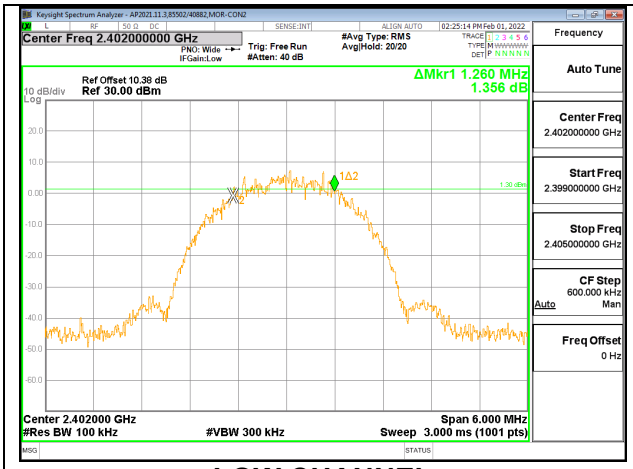
MID CHANNEL



HIGH CHANNEL

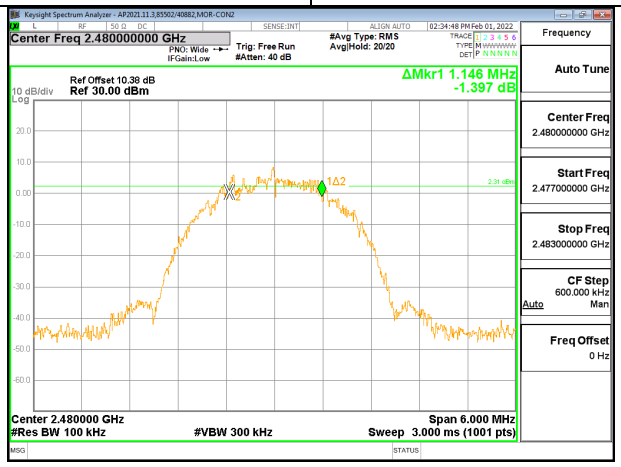
Chain 1

Channel	Frequency (MHz)	6 dB Bandwidth (MHz)	Minimum Limit (MHz)
Low	2402	1.2600	0.5
Middle	2440	1.2120	0.5
High	2480	1.1460	0.5



LOW CHANNEL

MID CHANNEL

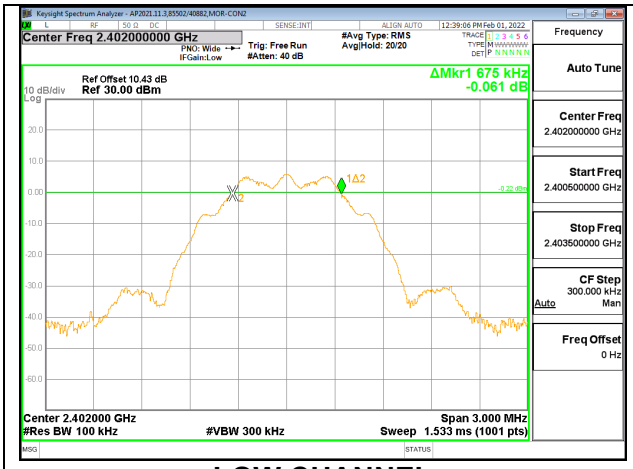


HIGH CHANNEL

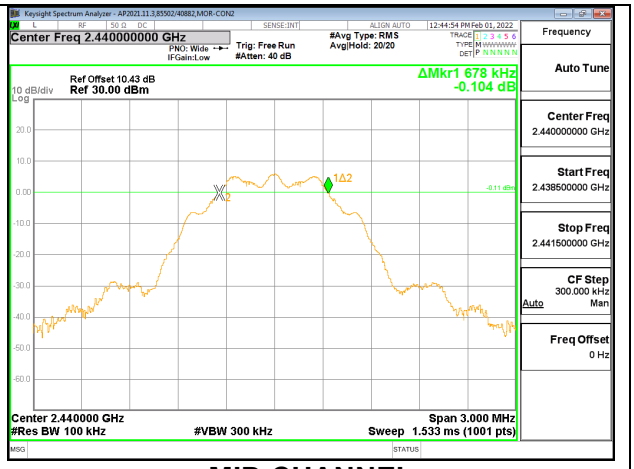
9.2.3. BLE (125Kbps)

Chain 0

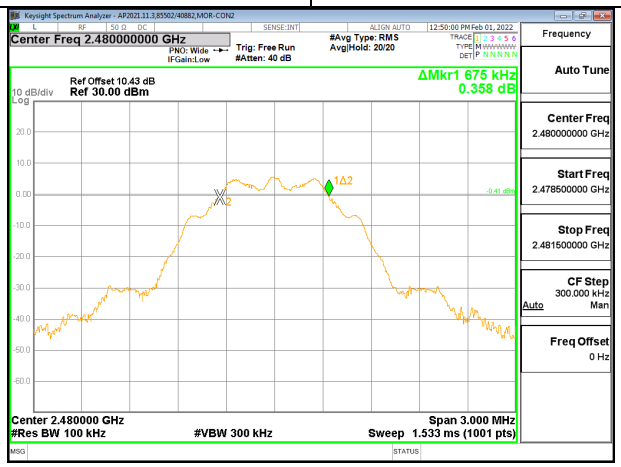
Channel	Frequency (MHz)	6 dB Bandwidth (MHz)	Minimum Limit (MHz)
Low	2402	0.6750	0.5
Middle	2440	0.6780	0.5
High	2480	0.6750	0.5



LOW CHANNEL



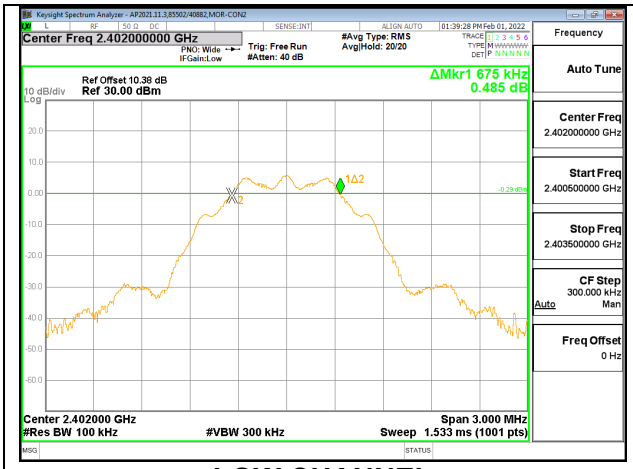
MID CHANNEL



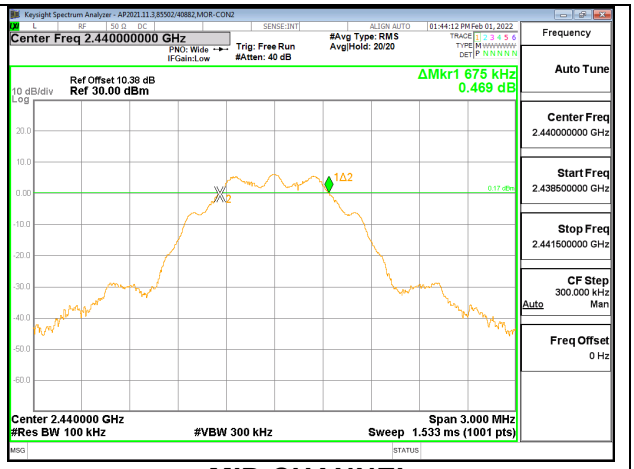
HIGH CHANNEL

Chain 1

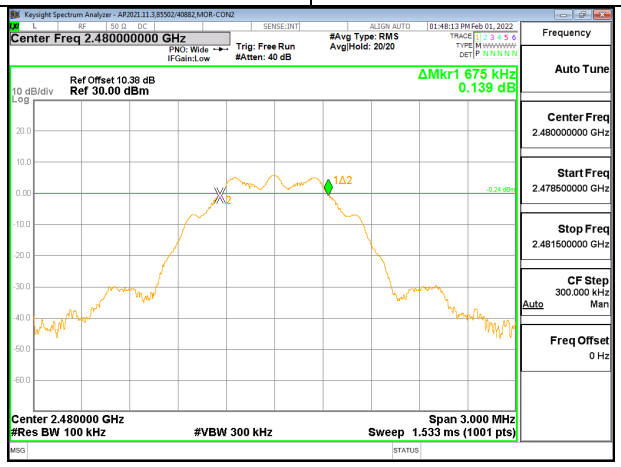
Channel	Frequency (MHz)	6 dB Bandwidth (MHz)	Minimum Limit (MHz)
Low	2402	0.6750	0.5
Middle	2440	0.6750	0.5
High	2480	0.6750	0.5



LOW CHANNEL



MID CHANNEL

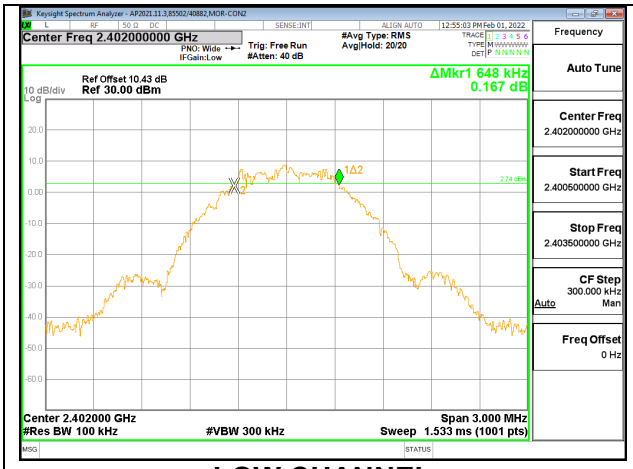


HIGH CHANNEL

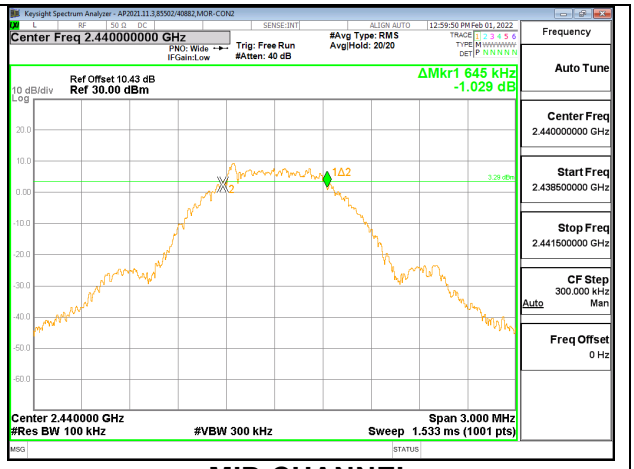
9.2.4. BLE (500Kbps)

Chain 0

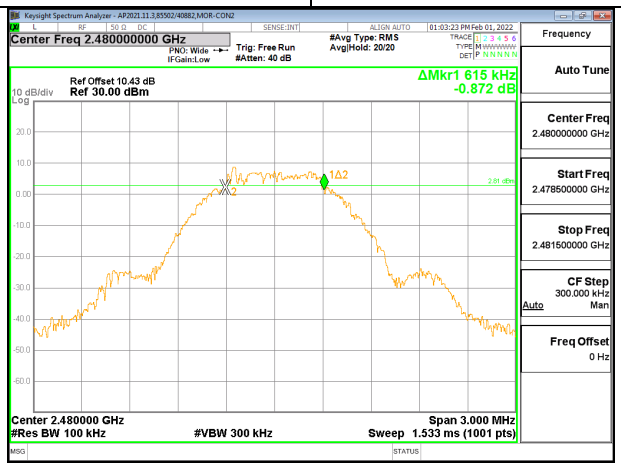
Channel	Frequency (MHz)	6 dB Bandwidth (MHz)	Minimum Limit (MHz)
Low	2402	0.6480	0.5
Middle	2440	0.6450	0.5
High	2480	0.6150	0.5



LOW CHANNEL



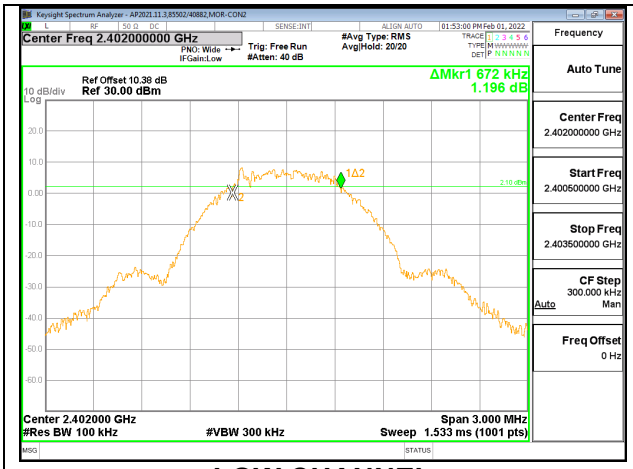
MID CHANNEL



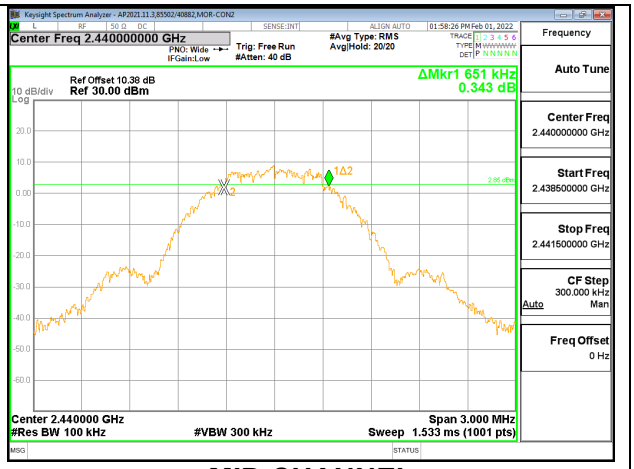
HIGH CHANNEL

Chain 1

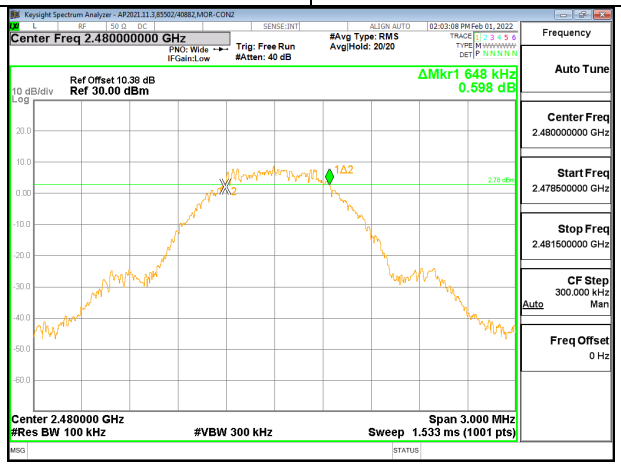
Channel	Frequency (MHz)	6 dB Bandwidth (MHz)	Minimum Limit (MHz)
Low	2402	0.6720	0.5
Middle	2440	0.6510	0.5
High	2480	0.6480	0.5



LOW CHANNEL



MID CHANNEL



HIGH CHANNEL

9.3. OUTPUT POWER

LIMITS

FCC §15.247 (b) (3)

The maximum antenna gain is less than or equal to 6 dBi, therefore the limit is 30 dBm.

TEST PROCEDURE

The transmitter output is connected to a power meter.

The cable assembly insertion loss of 11.04 dB (including 9.77 dB pad and 1.27 dB cable) was entered as an offset in the power meter.

The power output was measured on the EUT antenna port using SMA cable with 10dB attenuator connected to a power meter via wideband power sensor. Peak output power was read directly from power meter.

RESULTS

UL LLC
12 Laboratory Dr., RTP, NC 27709; USA TEL: (919)549-1400

9.3.1. BLE (1Mbps)

Chain 0

Tested By:	85502/40882
Date:	2022-03-30

Channel	Frequency (MHz)	Peak Power Reading (dBm)	Limit (dBm)	Margin (dB)
Low	2402	10.58	30	-19.420
Middle	2440	10.56	30	-19.440
High	2480	10.77	30	-19.230

Chain 1

Tested By:	85502/40882
Date:	2022-03-30

Channel	Frequency (MHz)	Peak Power Reading (dBm)	Limit (dBm)	Margin (dB)
Low	2402	10.54	30	-19.460
Middle	2440	11.00	30	-19.000
High	2480	11.07	30	-18.930

9.3.2. BLE (2Mbps)

Chain 0

Tested By:	85502/40882
Date:	2022-03-30

Channel	Frequency (MHz)	Peak Power Reading (dBm)	Limit (dBm)	Margin (dB)
Low	2402	11.01	30	-18.990
Middle	2440	10.95	30	-19.050
High	2480	11.16	30	-18.840

Chain 1

Tested By:	85502/40882
Date:	2022-03-30

Channel	Frequency (MHz)	Peak Power Reading (dBm)	Limit (dBm)	Margin (dB)
Low	2402	11.06	30	-18.940
Middle	2440	11.35	30	-18.650
High	2480	11.36	30	-18.640

9.3.3. BLE (125Kbps)

Chain 0

Tested By:	85502/40882
Date:	2022-03-30

Channel	Frequency (MHz)	Peak Power Reading (dBm)	Limit (dBm)	Margin (dB)
Low	2402	10.30	30	-19.700
Middle	2440	10.29	30	-19.710
High	2480	10.66	30	-19.340

Chain 1

Tested By:	85502/40882
Date:	2022-03-30

Channel	Frequency (MHz)	Peak Power Reading (dBm)	Limit (dBm)	Margin (dB)
Low	2402	10.31	30	-19.690
Middle	2440	10.78	30	-19.220
High	2480	10.92	30	-19.080

9.3.4. BLE (500Kbps)

Chain 0

Tested By:	85502/40882
Date:	2022-03-30

Channel	Frequency (MHz)	Peak Power Reading (dBm)	Limit (dBm)	Margin (dB)
Low	2402	10.54	30	-19.460
Middle	2440	10.58	30	-19.420
High	2480	10.66	30	-19.340

Chain 1

Tested By:	85502/40882
Date:	2022-03-30

Channel	Frequency (MHz)	Peak Power Reading (dBm)	Limit (dBm)	Margin (dB)
Low	2402	10.39	30	-19.610
Middle	2440	10.91	30	-19.090
High	2480	10.94	30	-19.060

9.4. AVERAGE POWER

LIMITS

None; for reporting purposes only.

TEST PROCEDURE

The transmitter output is connected to a power meter.

The cable assembly insertion loss of 11.04 dB (including 9.77 dB pad and 1.27 dB cable) was entered as an offset in the power meter.

The power output was measured on the EUT antenna port using SMA cable with 10dB attenuator connected to a power meter via wideband average power sensor. Gated average output power was read directly from power meter.

RESULTS

9.4.1. BLE (1Mbps)

Chain 0

Tested By:	85502/40882
Date:	2022-03-30

Channel	Frequency (MHz)	AV power (dBm)
Low	2402	10.20
Middle	2440	10.10
High	2480	10.39

Chain 1

Tested By:	85502/40882
Date:	2022-03-30

Channel	Frequency (MHz)	AV power (dBm)
Low	2402	10.24
Middle	2440	10.48
High	2480	10.69

9.4.2. BLE (2Mbps)

Chain 0

Tested By:	85502/40882
Date:	2022-03-30

Channel	Frequency (MHz)	AV power (dBm)
Low	2402	10.40
Middle	2440	10.29
High	2480	10.60

Chain 1

Tested By:	85502/40882
Date:	2022-03-30

Channel	Frequency (MHz)	AV power (dBm)
Low	2402	10.39
Middle	2440	10.68
High	2480	10.79

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9.4.3. BLE (125Kbps)

Chain 0

Tested By:	85502/40882
Date:	2022-03-30

Channel	Frequency (MHz)	AV power (dBm)
Low	2402	10.07
Middle	2440	9.95
High	2480	10.23

Chain 1

Tested By:	85502/40882
Date:	2022-03-30

Channel	Frequency (MHz)	AV power (dBm)
Low	2402	10.05
Middle	2440	10.30
High	2480	10.50

9.4.4. BLE (500Kbps)

Chain 0

Tested By:	85502/40882
Date:	2022-03-30

Channel	Frequency (MHz)	AV power (dBm)
Low	2402	10.16
Middle	2440	10.03
High	2480	10.28

Chain 1

Tested By:	85502/40882
Date:	2022-03-30

Channel	Frequency (MHz)	AV power (dBm)
Low	2402	10.16
Middle	2440	10.40
High	2480	10.60

9.5. POWER SPECTRAL DENSITY

LIMITS

FCC §15.247 (e)

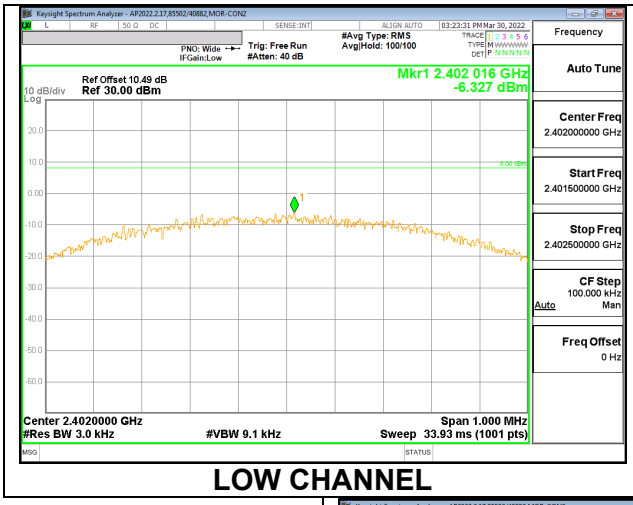
The power spectral density conducted from the transmitter to the antenna shall not be greater than 8 dBm in any 3 kHz band during any time interval of continuous transmission.

RESULTS

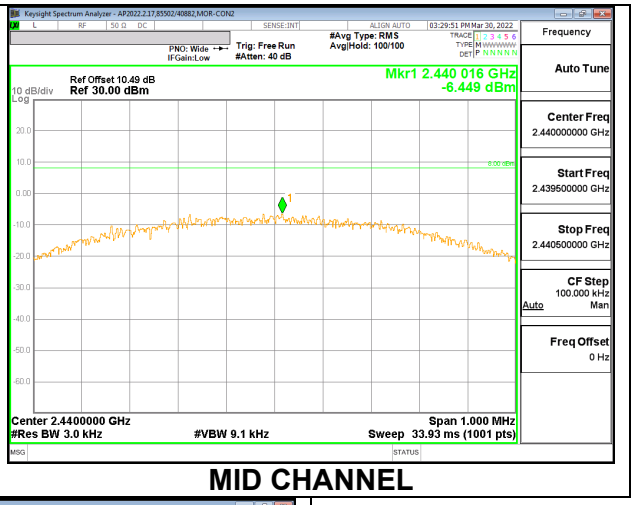
9.5.1. BLE (1Mbps)

Chain 0

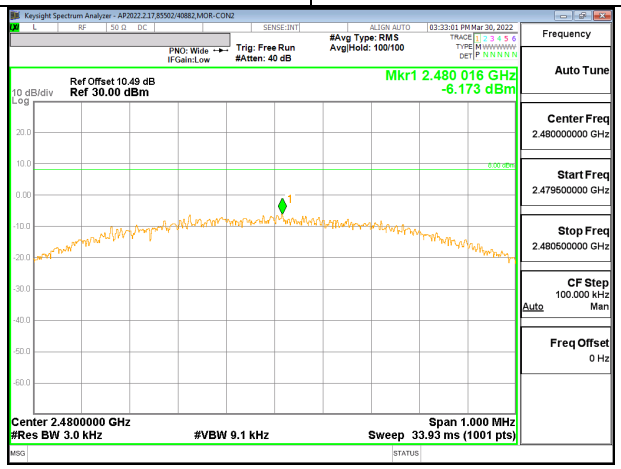
Channel	Frequency (MHz)	PSD (dBm/3kHz)	Limit (dBm/3kHz)	Margin (dB)
Low	2402	-6.327	8	-14.33
Middle	2440	-6.449	8	-14.45
High	2480	-6.173	8	-14.17



LOW CHANNEL



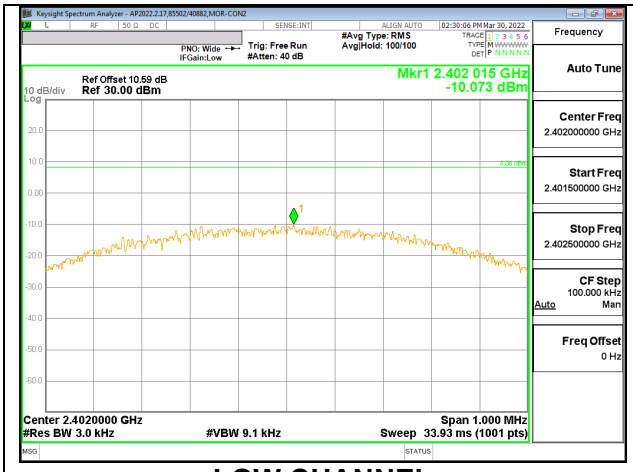
MID CHANNEL



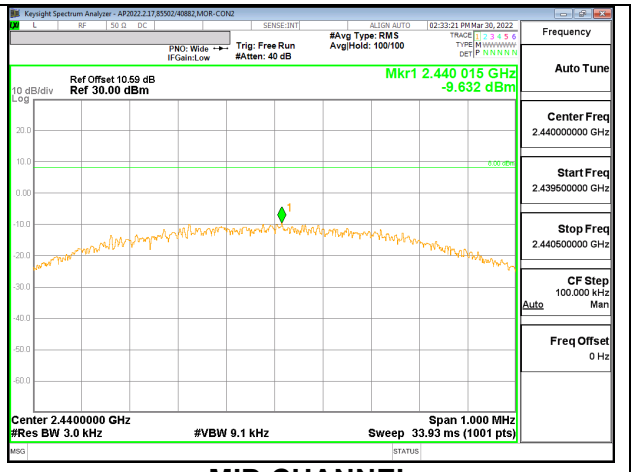
HIGH CHANNEL

Chain 1

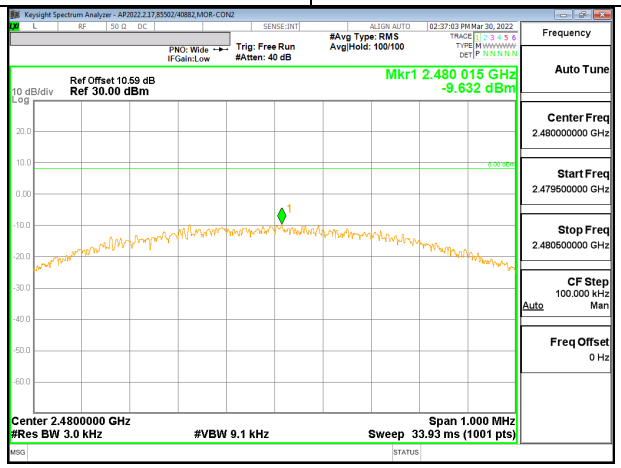
Channel	Frequency (MHz)	PSD (dBm/3kHz)	Limit (dBm/3kHz)	Margin (dB)
Low	2402	-10.073	8	-18.07
Middle	2440	-9.632	8	-17.63
High	2480	-7.697	8	-15.70



LOW CHANNEL



MID CHANNEL

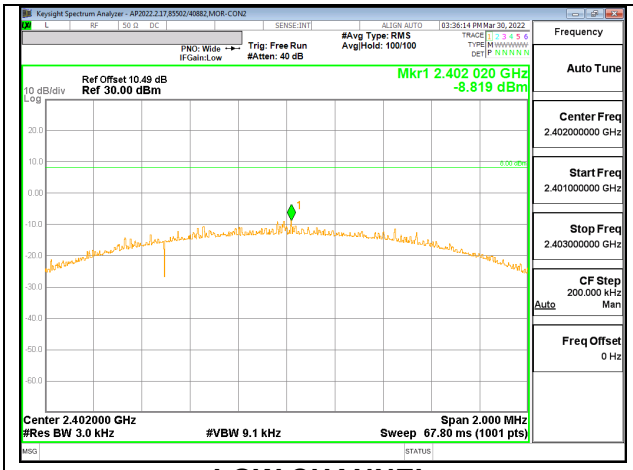


HIGH CHANNEL

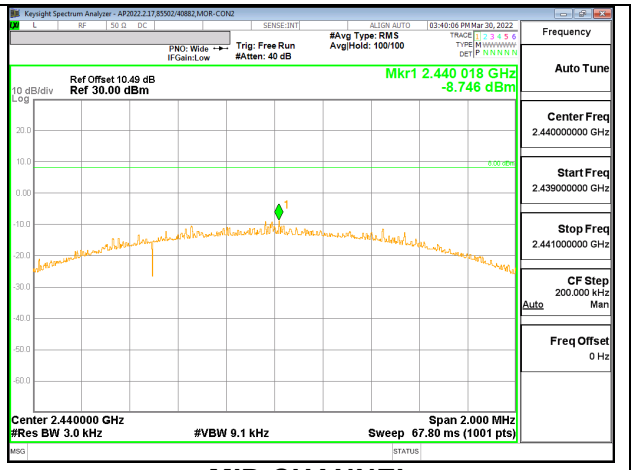
9.5.2. BLE (2Mbps)

Chain 0

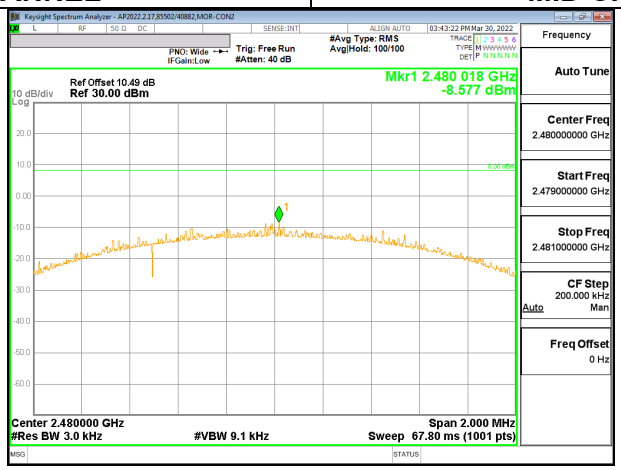
Channel	Frequency (MHz)	PSD (dBm/3kHz)	Limit (dBm/3kHz)	Margin (dB)
Low	2402	-8.819	8	-16.82
Middle	2440	-8.746	8	-16.75
High	2480	-8.577	8	-16.58



LOW CHANNEL



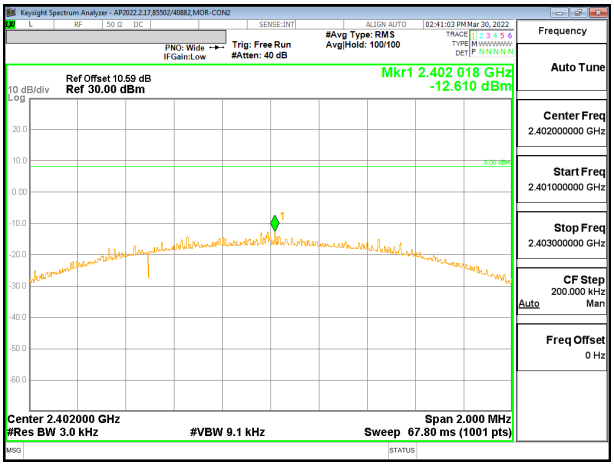
MID CHANNEL



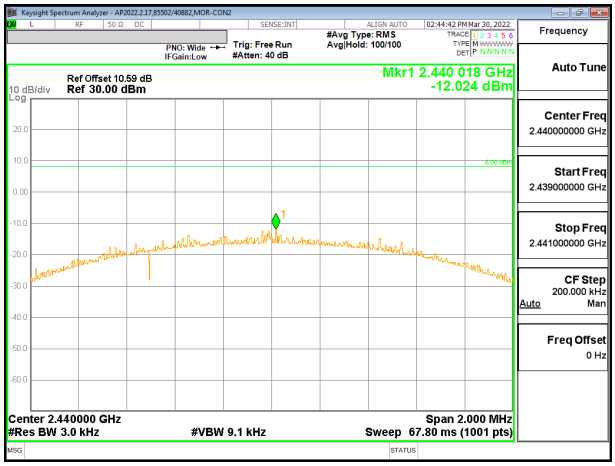
HIGH CHANNEL

Chain 1

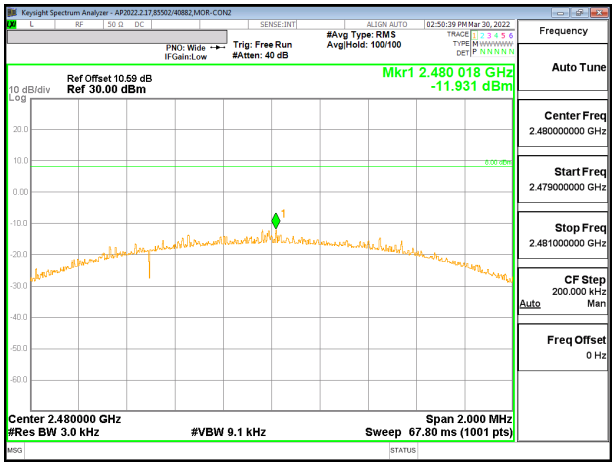
Channel	Frequency (MHz)	PSD (dBm/3kHz)	Limit (dBm/3kHz)	Margin (dB)
Low	2402	-12.610	8	-20.61
Middle	2440	-12.024	8	-20.02
High	2480	-11.931	8	-19.93



LOW CHANNEL



MID CHANNEL

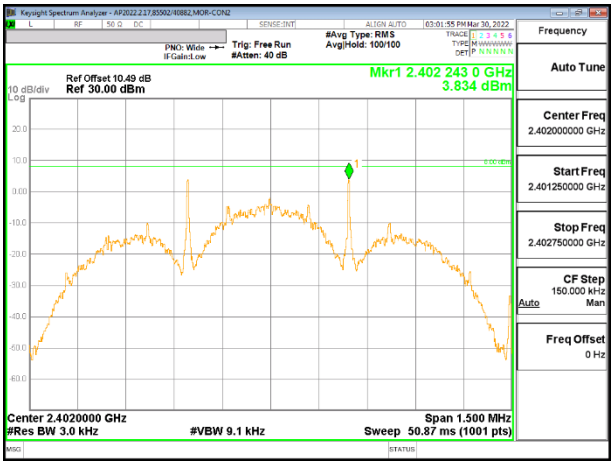


HIGH CHANNEL

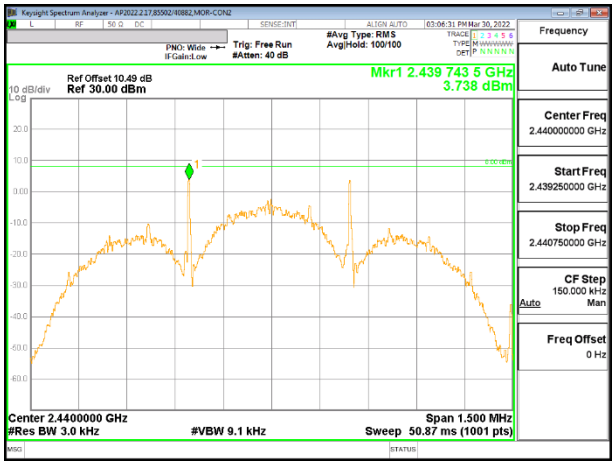
9.5.3. BLE (125Kbps)

Chain 0

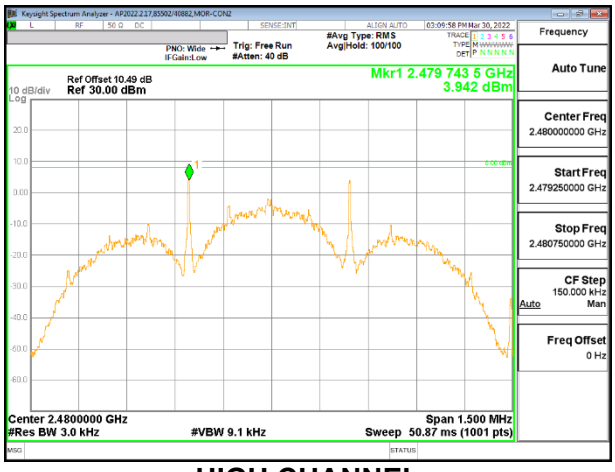
Channel	Frequency (MHz)	PSD (dBm/3kHz)	Limit (dBm/3kHz)	Margin (dB)
Low	2402	3.834	8	-4.17
Middle	2440	3.738	8	-4.26
High	2480	3.942	8	-4.06



LOW CHANNEL



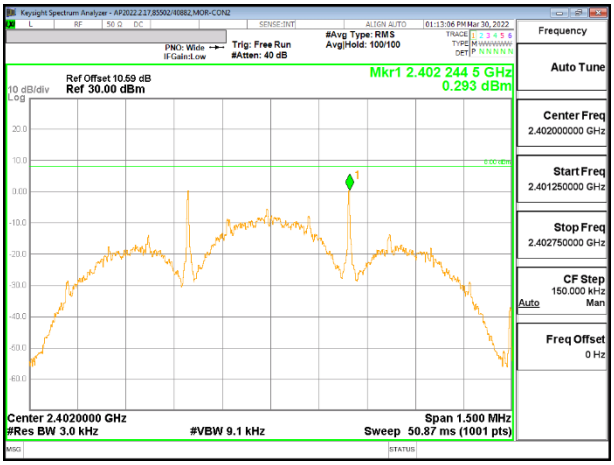
MID CHANNEL



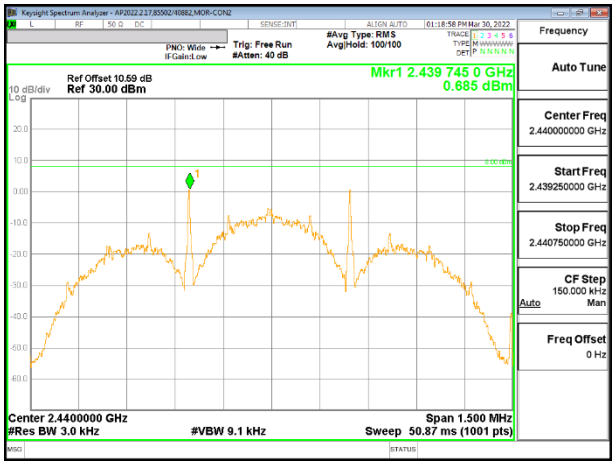
HIGH CHANNEL

Chain 1

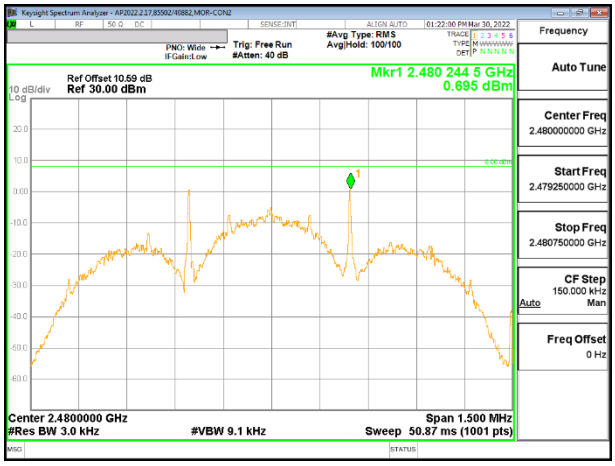
Channel	Frequency (MHz)	PSD (dBm/3kHz)	Limit (dBm/3kHz)	Margin (dB)
Low	2402	0.293	8	-7.71
Middle	2440	0.685	8	-7.32
High	2480	0.695	8	-7.31



LOW CHANNEL



MID CHANNEL

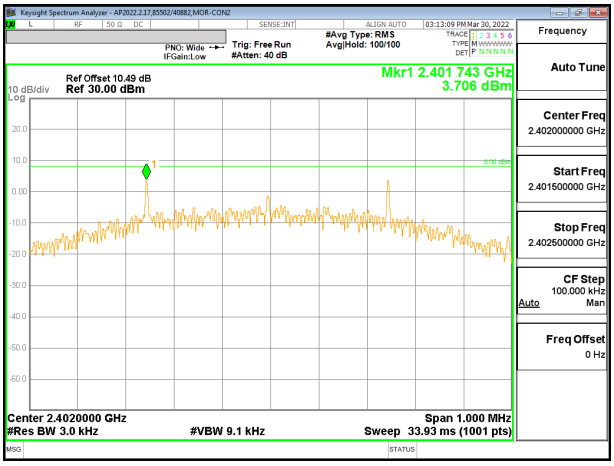


HIGH CHANNEL

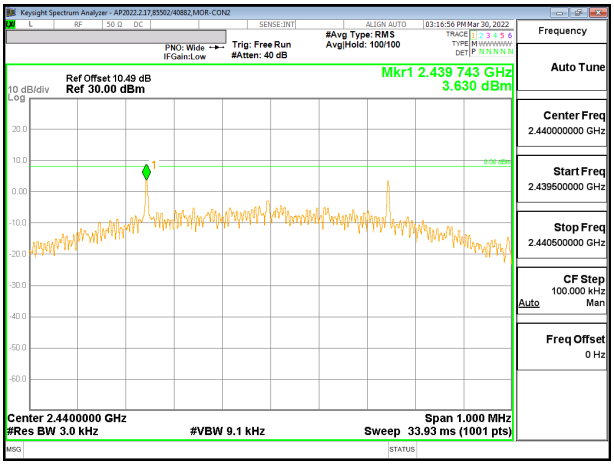
9.5.4. BLE (500Kbps)

Chain 0

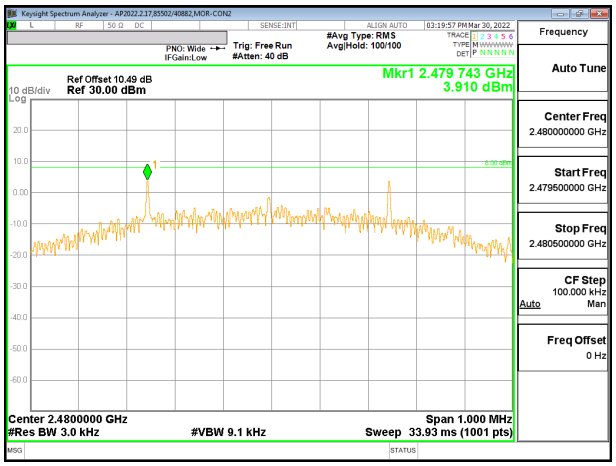
Channel	Frequency (MHz)	PSD (dBm/3kHz)	Limit (dBm/3kHz)	Margin (dB)
Low	2402	3.706	8	-4.29
Middle	2440	3.630	8	-4.37
High	2480	3.910	8	-4.09



LOW CHANNEL



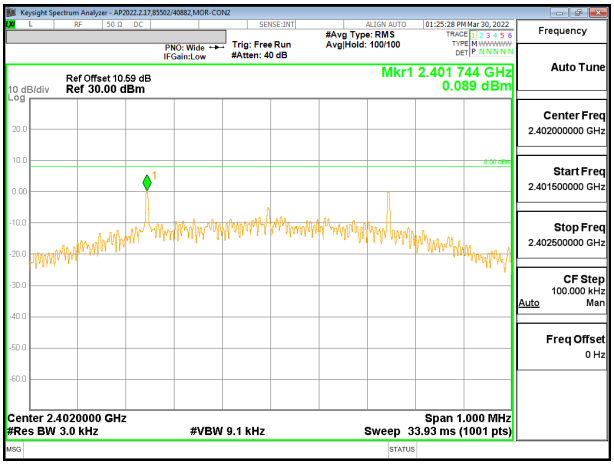
MID CHANNEL



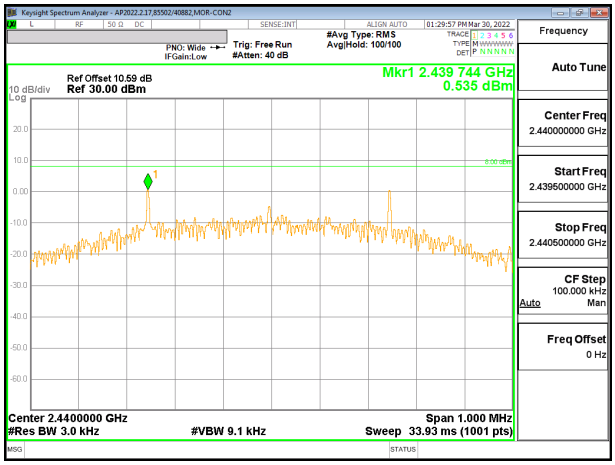
HIGH CHANNEL

Chain 1

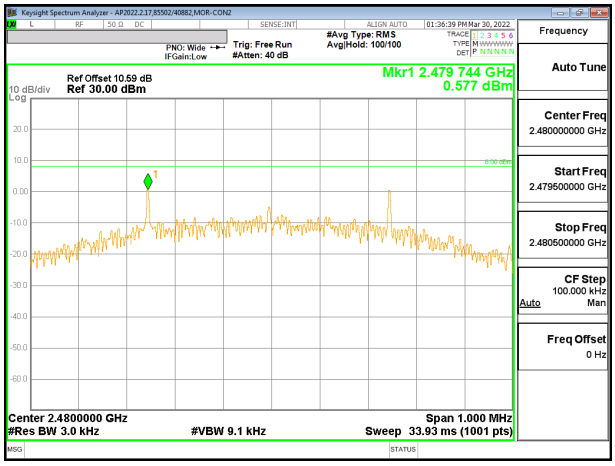
Channel	Frequency (MHz)	PSD (dBm/3kHz)	Limit (dBm/3kHz)	Margin (dB)
Low	2402	0.089	8	-7.91
Middle	2440	0.535	8	-7.47
High	2480	0.577	8	-7.42



LOW CHANNEL



MID CHANNEL



HIGH CHANNEL

9.6. CONDUCTED SPURIOUS EMISSIONS

LIMITS

FCC §15.247 (d)

RSS-247 5.5

Output power was measured based on the use of a peak measurement, therefore the required attenuation is -20 dBc.

RESULTS

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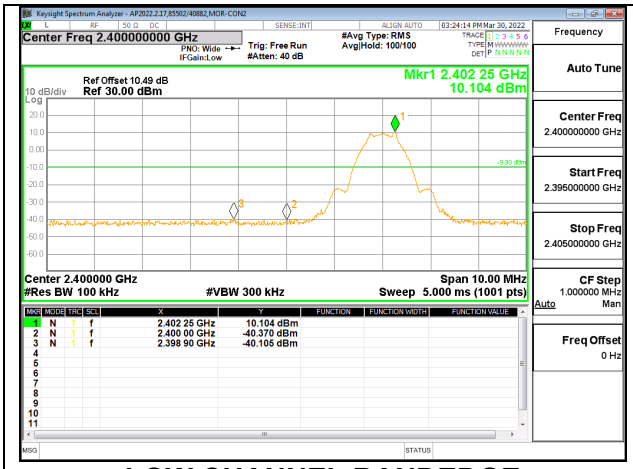
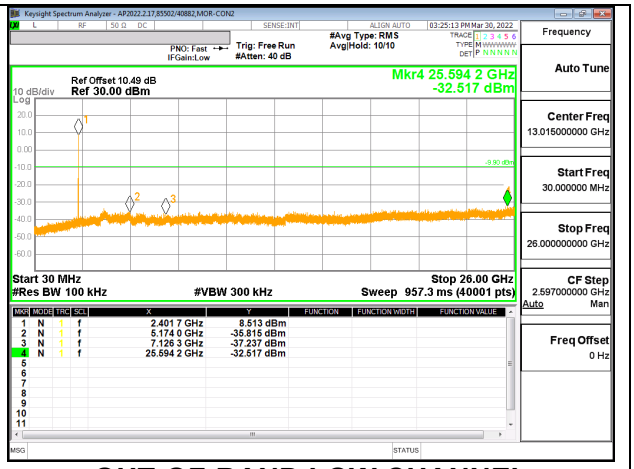
9.6.1. BLE (1Mbps)

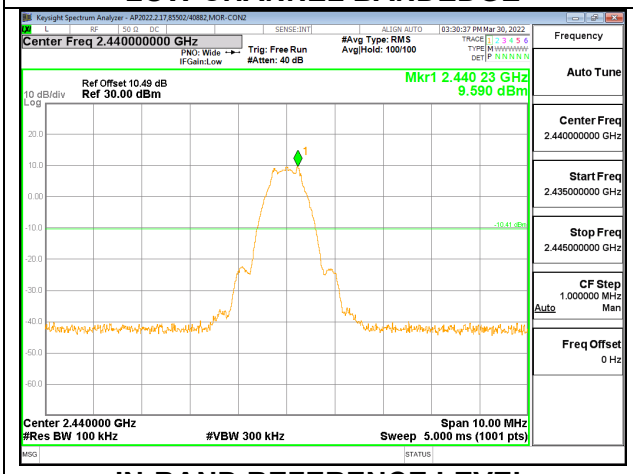
Chain 0



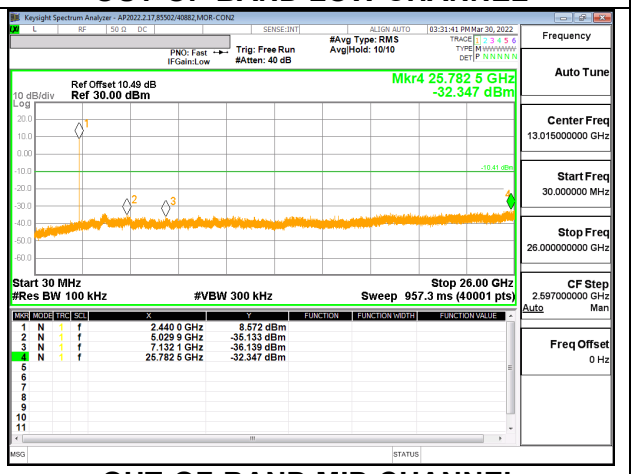
LOW CHANNEL BANDEDGE



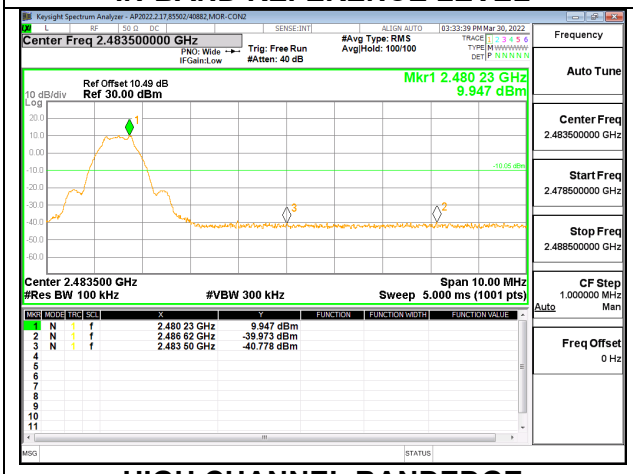
OUT-OF-BAND LOW CHANNEL



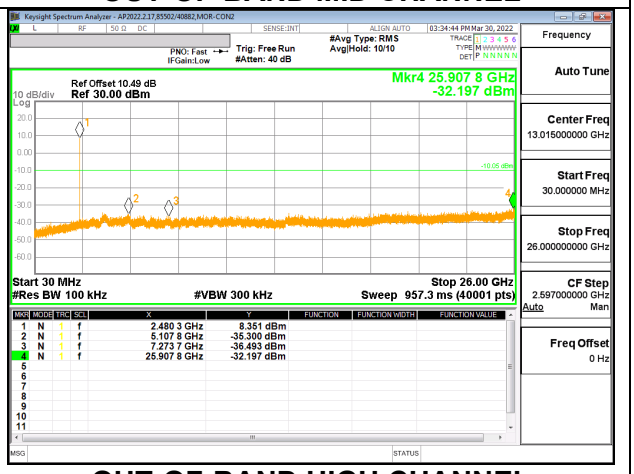
IN-BAND REFERENCE LEVEL



OUT-OF-BAND MID CHANNEL

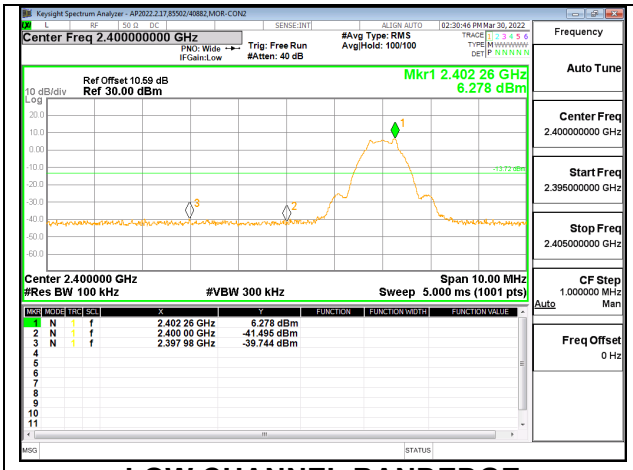


HIGH CHANNEL BANDEDGE

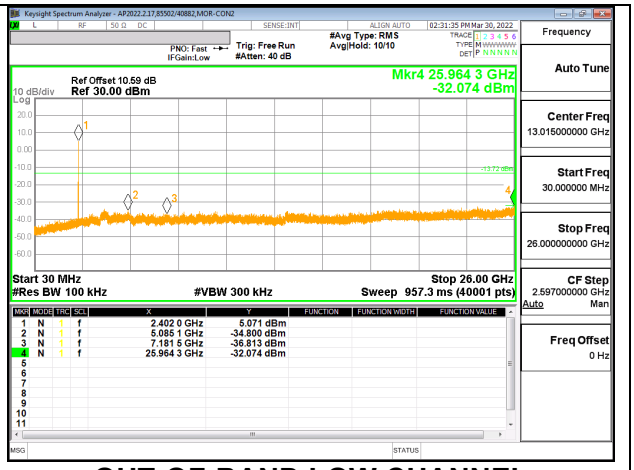


OUT-OF-BAND HIGH CHANNEL

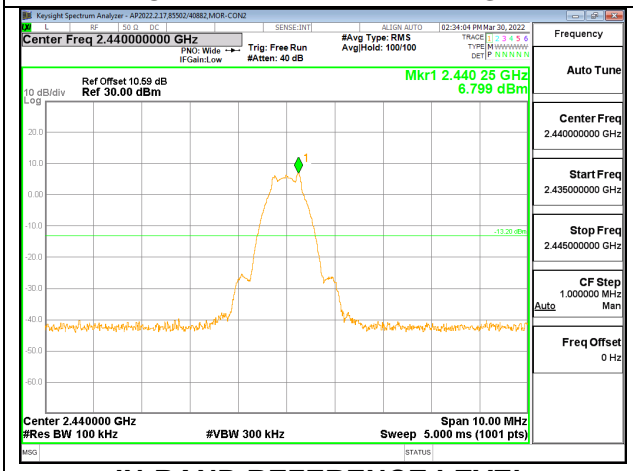
Chain 1



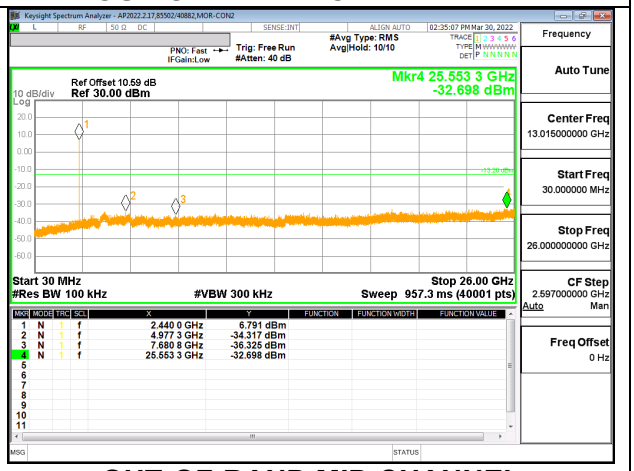
LOW CHANNEL BANDEDGE



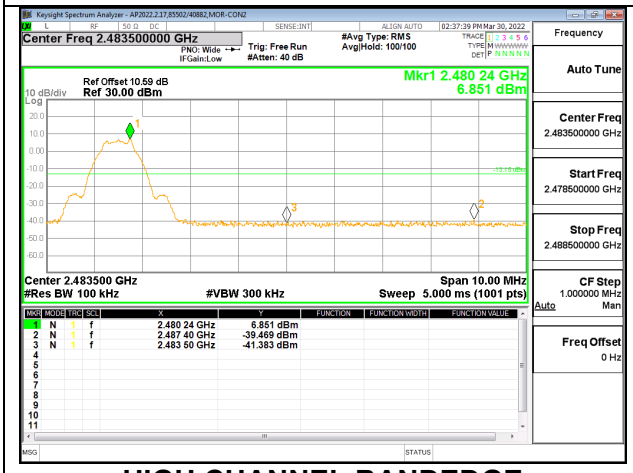
OUT-OF-BAND LOW CHANNEL



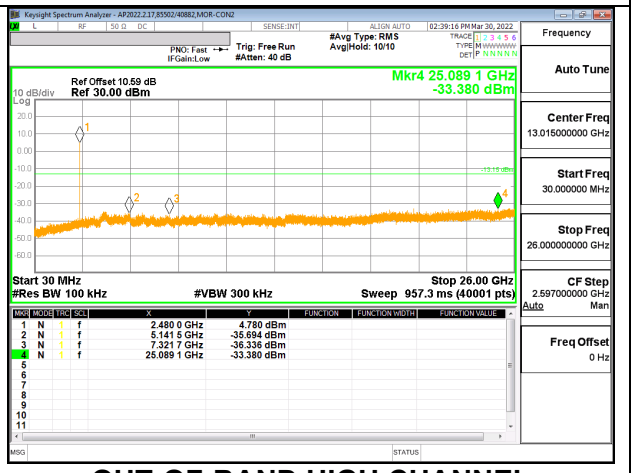
IN-BAND REFERENCE LEVEL



OUT-OF-BAND MID CHANNEL



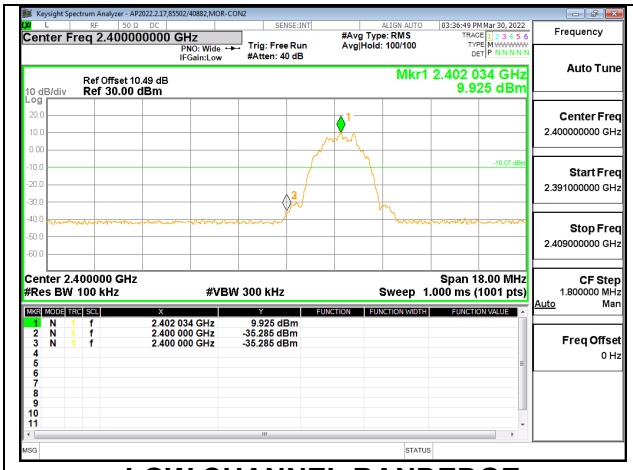
HIGH CHANNEL BANDEDGE



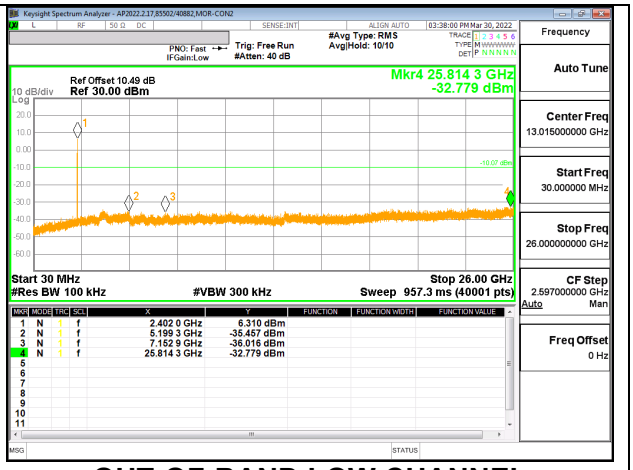
OUT-OF-BAND HIGH CHANNEL

9.6.2. BLE (2Mbps)

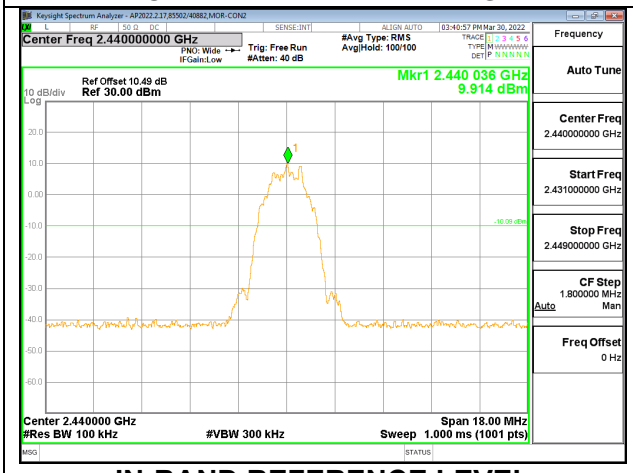
Chain 0



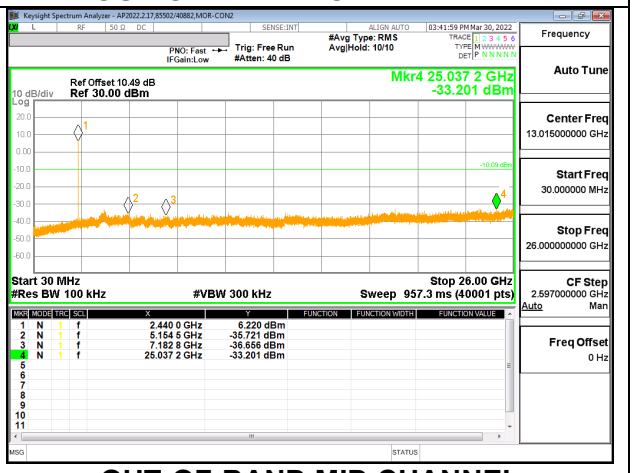
LOW CHANNEL BANDEDGE



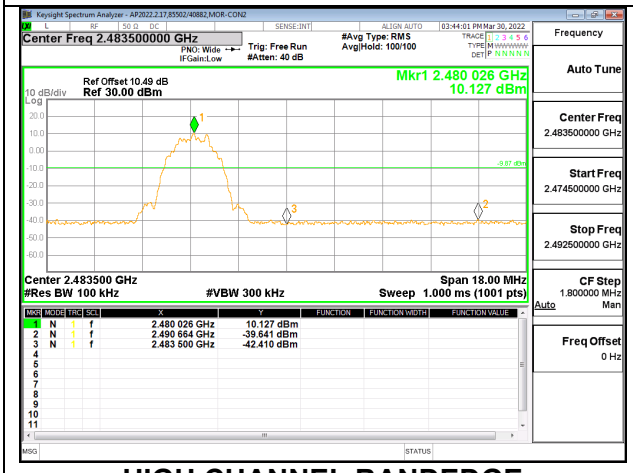
OUT-OF-BAND LOW CHANNEL



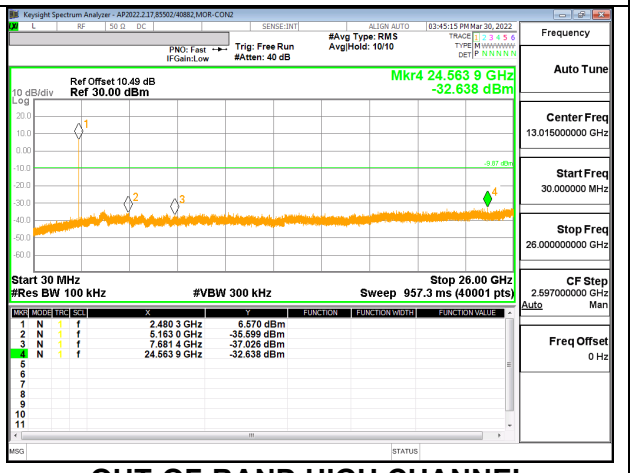
IN-BAND REFERENCE LEVEL



OUT-OF-BAND MID CHANNEL

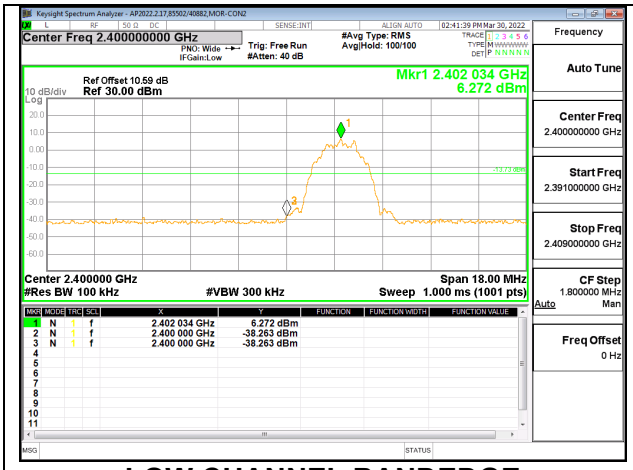


HIGH CHANNEL BANDEDGE

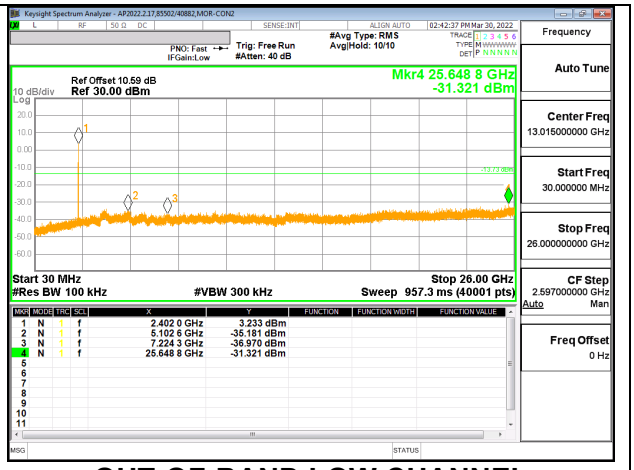


OUT-OF-BAND HIGH CHANNEL

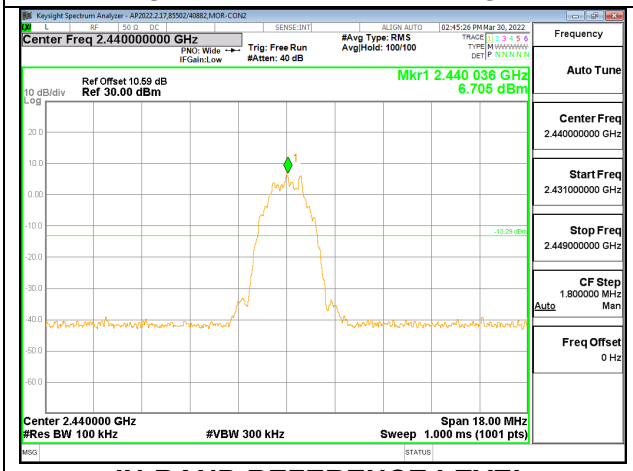
Chain 1



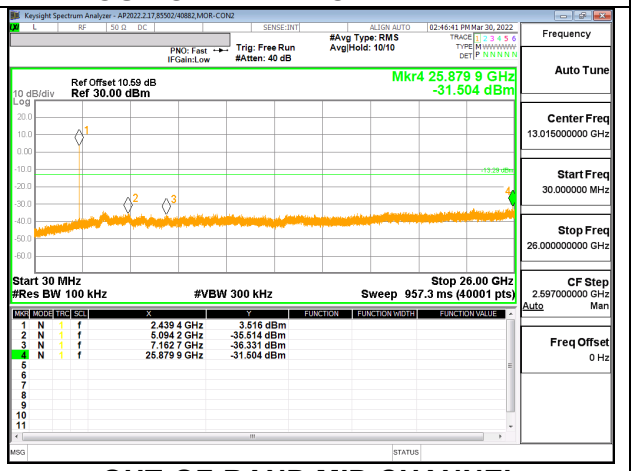
LOW CHANNEL BANDEDGE



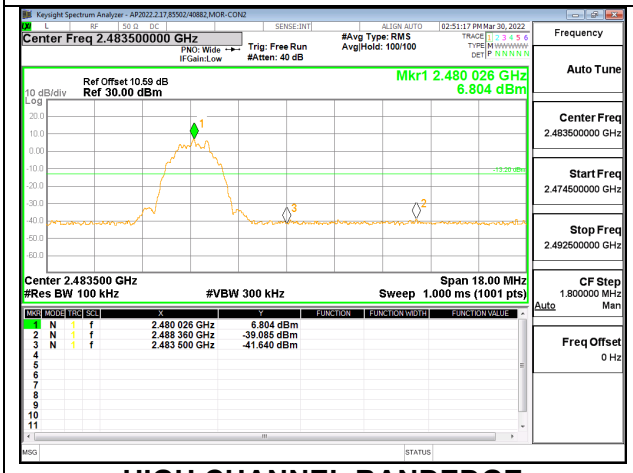
OUT-OF-BAND LOW CHANNEL



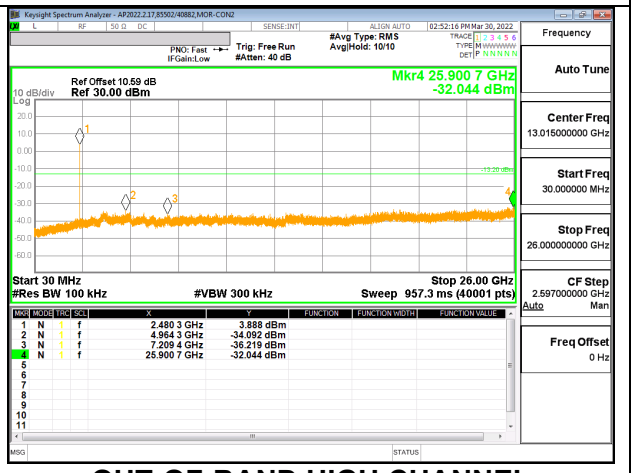
IN-BAND REFERENCE LEVEL



OUT-OF-BAND MID CHANNEL



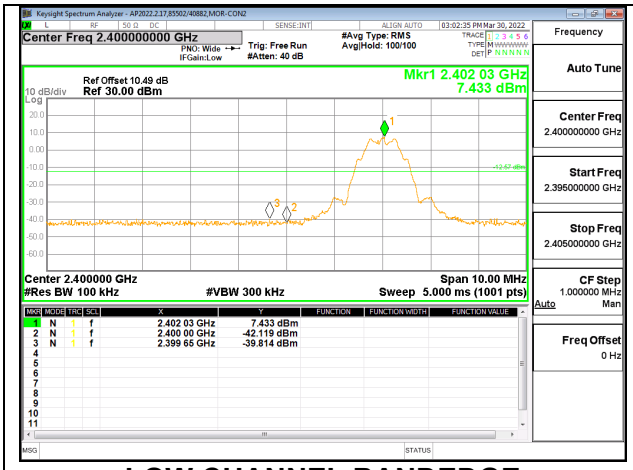
HIGH CHANNEL BANDEDGE



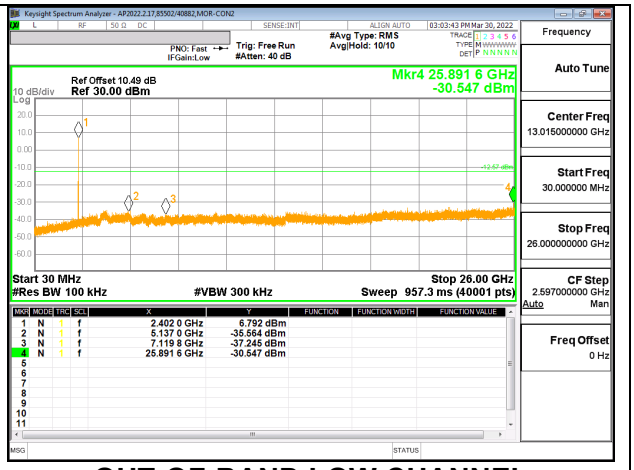
OUT-OF-BAND HIGH CHANNEL

9.6.3. BLE (125Kbps)

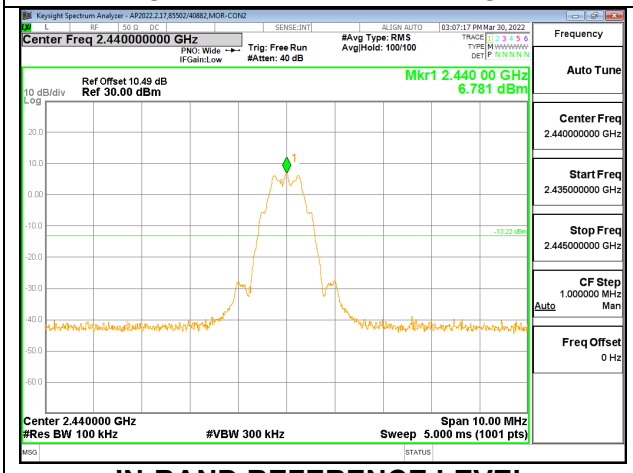
Chain 0



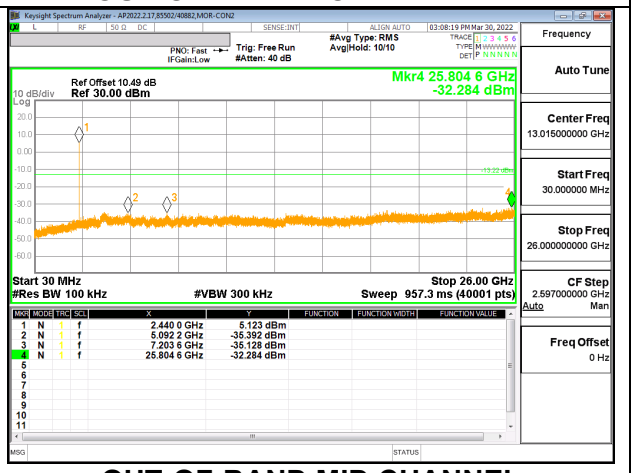
LOW CHANNEL BANDEDGE



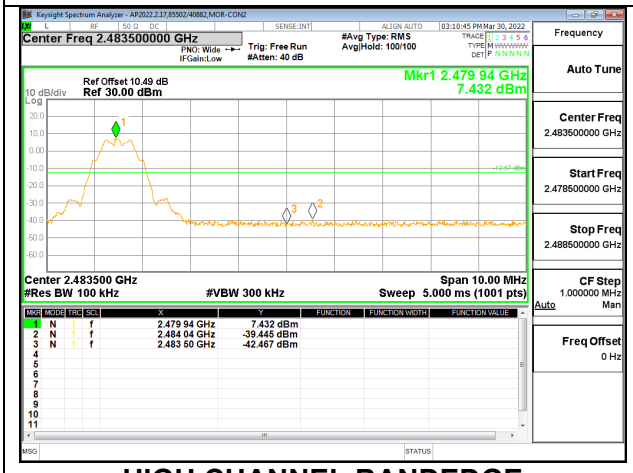
OUT-OF-BAND LOW CHANNEL



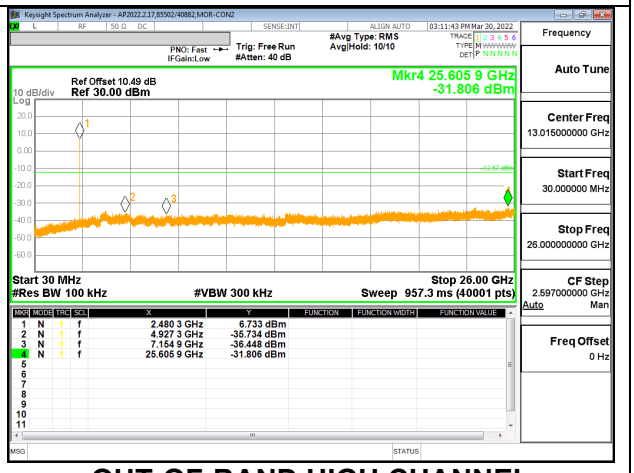
IN-BAND REFERENCE LEVEL



OUT-OF-BAND MID CHANNEL



HIGH CHANNEL BANDEDGE



OUT-OF-BAND HIGH CHANNEL

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